S
333.711
0285
N11rum
1994
Montana Rivers
Information System

# N nformation System

## Reporting User's Manual

STATE DOCUMENTS COLLECTION

MAY 30 1995

MONTANA STATE LIBRARY
1515 E. 6th AVE.
HELENA, MONTANA 59620

State of Idaho
State of Montana
State of Oregon
State of Washington

NW Indian Tribes

USDA Forest Service
USDI Bureau of Land Management
USDI Fish and Wildlife Service
USDI National Park Service
NW Power Planning Council
Bonneville Power Administration

February 1994

MONTANA STATE LIBRARY
S 333.7110285 N11rum 1994 c.1
Montana Rivers Information System :repor
3 0864 00093893 9

APR 17 2000

# MONTANA RIVERS INFORMATION SYSTEM

# REPORTING USER'S MANUAL

*MONTANA DEPARTMENT FISH, WILDLIFE, AND PARKS*

*MONTANA NATURAL RESOURCE INFORMATION SYSTEM*

*BONNEVILLE POWER ADMINISTRATION*

*FEBRUARY 1994*

## TABLE OF CONTENTS

1 THE MONTANA RIVERS INFORMATION SYSTEM REPORTING PROGRAM . . . . . 1
1.1 OVERVIEW . . . . . 1
1.2 INSTALLATION AND EQUIPMENT . . . . . 1
1.2.1 Equipment Needed . . . . . 1
1.2.2 Installing the Reporting Program . . . . . 1
1.3 THINGS TO REMEMBER . . . . . 2
1.3.1 If You Get an Error . . . . . 2
1.3.2 Technical Support and Other Assistance . . . . . 2
1.3.3 The EPA River Reach Numbering System . . . . . 3
1.3.4 GIS and Querying the Montana Rivers Information System . . . . . 3
1.4 USING THE SYSTEM . . . . . 4
1.4.1 Starting the MRIS Reporting Program Software . . . . . 4
1.4.2 Main Menu or Opening Screen . . . . . 4
1.5 ELEMENTS OF A RETRIEVAL . . . . . 5
1.5.1 Design the Report. . . . . 5
Step 1: Set up the Search . . . . . 5
Step 2: Select a Report Format . . . . . 5
Step 3: Produce the Report . . . . . 5
1.5.2 Utility Options . . . . . 5
Verify Search Criteria and Report Format . . . . . 5
Save a Report Control File . . . . . 6
Retrieve a Report Control File . . . . . 6
Count Records Matching Search Criteria . . . . . 6
Override Default Report Order . . . . . 6

2 EXAMPLE OF A COMMON RETRIEVALS . . . . . 6
2.1 A Simple Query - Selecting a stream name . . . . . 7
Step 1: Set up the Search . . . . . 7
2.1.1 Step 2: Select the Report Format . . . . . 10
2.1.2 Step 3: Produce the Report. . . . . 12
2.2 A More Complex Query - Fish Species, by Genetic Code, by Hydrologic Unit . . . 14
3 OTHER FEATURESOF THE MRIS REPORTING PROGRAM . . . . . 20
3.1 Saving a Report Control File . . . . . 20
3.2 Retrieve a Report Control File. . . . . 21
3.3 Saving a Record Number File . . . . . 21
3.4 Using a Record Number File . . . . . 22
3.5 Save a File . . . . . 22
3.6 Changing Search Criteria . . . . . 24
3.7 Overriding Default Reporting Order . . . . . 26
4 EXITING THE SYSTEM . . . . . 26

5 ADDITIONAL FISHERIES SEARCH OPTIONS . . . . . 26
5.1 Set Up the Search - Stream Name - Enter a Stream Name . . . . . 27
5.2 Set Up the Search - Stream Name - Select Streams by Hydrounit & Name . . . . . 28
5.3 Set Up the Search - Location - Hydrologic Unit by Name, by County, by FWP Region or Tourism Region . . . . . 28
5.4 Set Up the Search - Location - Tributary To . . . . . 30
5.5 Set Up the Search - Land Ownership . . . . . 31
5.6 Set Up the Search - Fisheries - Species - Fish Abundance or Fish Use . . . . . 32
5.7 Set Up the Search - Fisheries - Spawning . . . . . 33
5.8 Set Up the Search - Fisheries - Fishing Pressure . . . . . 34
5.9 Set Up the Search - Fisheries - Limiting Factors/Management Recommendations . . . . . 35
5.10 Set Up a Search - Ad Hoc Query (Fisheries) . . . . . 36

6 RECREATION SEARCH OPTIONS . . . . . 38
6.1 Set Up the Search - Stream Name . . . . . 38
6.2 Set Up the Search - Recreation Features - Boatable Season . . . . . 40
6.3 Set Up the Search - Recreation Features - Whitewater Class . . . . . 41
6.4 Set Up the Search - Recreation Features - Recreation Site Type . . . . . 41
6.5 Set Up the Search - Ad Hoc Query (Recreation) . . . . . 42

APPENDICES . . . . . 44

APPENDIX A . . . . . A-1
MRIS Reporting Program Installation . . . . . A-1

APPENDIX B . . . . . B-1
Runtime Errors . . . . . B-1

APPENDIX C . . . . . C-1
MRIS Reporting Program Files . . . . . C-1
APPENDIX D . . . . . D-1
Data Structures and other support documents . . . . . D-1
APPENDIX E . . . . . E-1
Recreation Databases Structures . . . . . E-1

## TABLE OF CONTENTS FOR FIGURES

Figure 1. Main Menu . . . . 4
Figure 2. Set up the Search . . . . 7
Figure 3. Stream Name Menu . . . . 8
Figure 4. Selecting from a List . . . . 8
Figure 5. Select the Report Format . . . . 10
Figure 6. Full Report Sections . . . . 11
Figure 7. Verify Search and Report Format . . . . 12
Figure 8. Produce the Report Menu . . . . 12
Figure 9. Full Report (partial) . . . . 13
Figure 10. Fisheries Menu . . . . 14
Figure 11. Selecting a Fisheries Category Menu . . . . 15
Figure 12. Selecting a Fish Species Menu . . . . 15
Figure 13. Adding Additional Headings to Page Screen . . . . 16
Figure 14. Full Species Report . . . . 17
Figure 15. Genetics Code Pick-List . . . . 18
Figure 16. Location Menu . . . . 19
Figure 17. Selecting by Hydrologic Unit Number . . . . 19
Figure 18. Save a Report Control File . . . . 21
Figure 19. Save a Record Number File Screen . . . . 21
Figure 20. Using a Record Number File . . . . 22
Figure 21. Save Report Control File Screen . . . . 23
Figure 22. Edited Document in Word Perfect . . . . 24
Figure 23. Change Hydrologic Unit Selection Screen . . . . 25
Figure 24. Exiting the Program screen . . . . 26
Figure 25. Entering a Stream Name Menu . . . . 27
Figure 26. Selecting Streams by Hydrounit & Name Screen . . . . 28
Figure 27. Hydrologic Unit by Name Pick-List . . . . 29
Figure 28. Selecting by County . . . . 29
Figure 29. Selecting by FWP Region . . . . 30
Figure 30. Selecting by Tourism County . . . . 30
Figure 31. Tributary to Menu . . . . 31
Figure 32. Selecting Major Land Ownership Type . . . . 31
Figure 33. Selecting Land Ownership Agency Menu (after Federal Sector selection) . . . . 32
Figure 34. Fish Species Abundance Pick-List . . . . 32
Figure 35. Fish Use Menu . . . . 33
Figure 36. Spawning Value Menu . . . . 33
Figure 37. Fishing Pressure Menu . . . . 34
Figure 38. Entering a range of Fishing Pressure . . . . 35
Figure 39. Limiting Factors and Recommendations Menu . . . . 36

Figure 40. List of Limiting Factors from One Category . . . . . 36
Figure 41. Databases Accessed Through Ad Hoc Query . . . . . 37
Figure 42. Ad Hoc Database Selection Menu . . . . . 37
Figure 43. Recreation Data Report Sections . . . . . 39
Figure 44. Full Recreation Report (first page) . . . . . 39
Figure 45. Recreation Features Menu . . . . . 40
Figure 46. Boatable Season Menu . . . . . 40
Figure 47. Whitewater Class Menu . . . . . 41
Figure 48. Recreation Site Type Menu . . . . . 42

# MONTANA RIVERS INFORMATION SYSTEM

# REPORTING PROGRAM

# USER'S MANUAL

## Preface

The development of the *Montana Rivers Information System Reporting Program* is a cooperative effort between the Montana Department of Fish, Wildlife, and Parks; the Natural Resource Information System, and the Bonneville Power Administration. The reporting program was developed to be used for querying data in the natural resource databases managed by the Montana Rivers Information System. The examples given in this manual are for the fisheries and recreation databases; other datasets using the reporting program in the future will include wildlife, natural features, and geologic features.

The Montana Rivers Information System staff manages the natural resource databases as part of the Information Services Unit of the Montana Department of Fish, Wildlife, and Parks.

## Acknowledgements

This MRIS Reporting Program User's Manual was prepared by the staff of the Montana Rivers Information System using a manual developed by the Natural Resource Information System for another reporting program. Assistance was given by the NRIS Programmer/Analyst, Jim Senkler, who wrote the reporting programs and Jim Stimson, who wrote the manual used as a prototype.

Thanks continue to go towards the Bonneville Power Administration for their continued support of the Montana Rivers Information System.

# 1 THE MONTANA RIVERS INFORMATION SYSTEM REPORTING PROGRAM

## 1.1 OVERVIEW

The Montana Rivers Information System (MRIS) Reporting Program contains information on a variety of river related natural resources and their comparative rating using the EPA River Reach Numbering System as their major index. The MRIS Reporting Program provides access to the MRIS data using a PC platform in compiled programming. The software can be used to generate complex data queries reported in a variety of formats.

The purpose of this manual is to show you how to use the MRIS Reporting Program to retrieve data and produce reports. Other features of the system will also be explained. Several examples are presented to demonstrate the query options and how to construct complex queries by using several options in concert.

## 1.2 INSTALLATION AND EQUIPMENT

### 1.2.1 Equipment Needed

The reporting program and all the MRIS programs are written in Clipper, a programming language that uses dBASE files. The programs have been designed to run on personal computers using MS-DOS 3.3 or greater with a minimum of a 286 processor with at least 480 Kbytes of available conventional memory. However, for optimal performance the programs require a 386 processor with 4 Mbytes of RAM. In addition, the 4 Mbytes of RAM need to be configured with at least 2 Mbytes as Expanded Memory (EMS) and 520 Kbytes of available conventional memory. MS DOS 6.00 and greater provides the capability to configure the memory. If you are not familiar with configuring the memory contact your system administrator. Using a 286 computer will probably result in unacceptable performance.

### 1.2.2 Installing the Reporting Program

The databases used in the reporting program are the same as those that are used in the MRIS Edit/Entry Programs. An installation program has been provided on the disc or discs that you have received if you have requested the system. **Please refer to Appendix A** for complete instructions. The installation program does everything from installing the data, to creating the directory, to changing your system files. The programs and all the statewide MRIS data need approximately 32 megabytes of hard drive space. If you are in a regional or field office, you will be sent only a subset of the data for your region or management area which will be significantly smaller.

Statewide data is available upon request. A network version has been installed at the MDFWP headquarters in Helena.

## 1.3 THINGS TO REMEMBER

### 1.3.1 If You Get an Error

The MRIS Reporting Program has been thoroughly tested for all of the commonly used retrievals. However, it is possible that some errors or bugs are still waiting to be discovered. It is also possible that pressing an incorrect series of keys can cause an error message. An error message will appear as a box on your screen with a message containing a line of programming code and the words **Quit** or **Retry**. If this occurs, pressing **Enter** will display where the problem occurred in the program. To print the error message, press **Shift-Print Scrn** which will send the message on the screen to the printer. You are now at the Dos prompt and can restart the reporting program by typing in **RPSTREAM**. Restart the program and if the same error occurs, before calling for help, first erase all the indices within the directory containing the program using the command from the DOS prompt: C:\MRIS\ERASE *.NTX. A corrupted index can play havoc on any program. Then restart the program and try again. Rebuilding the indices does take some time. If the error still occurs, check Appendix B (Runtime Errors) and call for technical support (Section 1.3.2.) if all else fails.

### 1.3.2 Technical Support and Other Assistance

The MRIS and Natural Resource Information System staff at the State Library provide technical support and answers for a variety of general and technical questions. Call the following numbers for assistance:

- Janet Decker-Hess, Program Manager and Fisheries Biologist, 752-5501, ext.228
- Gail Bissell, Wildlife Biologist, 752-5501, ext. 220
- Denise Davies, Recreation Research Assistant, 752-5501, ext. 228
- Jeff Hutten, MRIS and GIS Technician, 752-5501, ext. 240

To receive a copy of the program and accompanying data in hard copy or tabular file, and to answer query questions:

- Val Jaffe, Natural Resource Information System, 444-5354

### 1.3.3 The EPA River Reach Numbering System

The major stream reach identifier used in MRIS is an enhanced version of the EPA River Reach File 1, adopted by the Bonneville Power Administration. There are currently over 8,000 stream reaches in the MRIS master stream database. A reach is defined as a stream segment located between two stream confluences. The structure of the RRN is defined as:

17010204 001 00.00
/ / \
(hydrologic unit) (reach number) (mile post)

Montana is divided into 110 hydrologic units which define the major drainages in the state (Appendix D-15). You will notice in the Fisheries and Stream Characteristics Databases a field called **Section.** The reach boundaries for these stream segments did not fit to a stream confluence and/or could not be moved without affecting the biological integrity of the data. As a result, a stream in the Montana system is identified by the 16 digit EPA RRN plus a 1 digit **Section** number used in these rare cases where we could not determine an appropriate reach break.

### 1.3.4 GIS and Querying the Montana Rivers Information System

All data contained in the MRIS Reporting Program can also be visually displayed and analyzed using ARC/INFO, a geographic information system (GIS). An ARC/INFO work station is located in Kalispell and operated by MRIS staff. All data are connected to an electronic 1:100 000 hydrography layer cross-referenced to the EPA River Reach File 1 which is used as the MRIS master stream database.

If you are interested in querying or analyzing MRIS data in a GIS format with any of the available layers listed in Appendix D, contact:

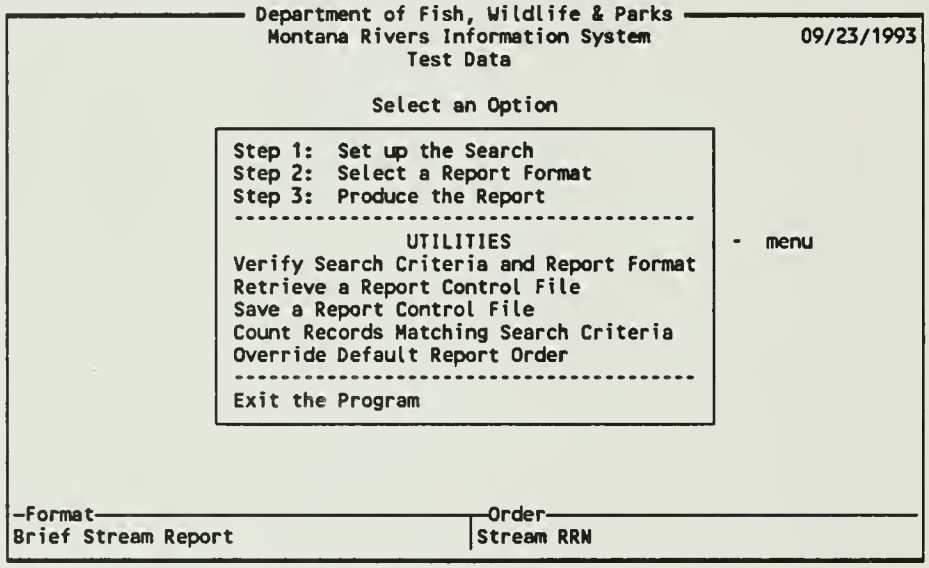
Fisheries, Janet Decker-Hess, 752-5501, ext. 228,
Wildlife, Gael Bissell, 752-5501, ext. 220, or
Recreation, Denise Davies, 752-5501, ext. 228.

## 1.4 USING THE SYSTEM

### 1.4.1 Starting the MRIS Reporting Program Software

Change to the directory containing the RPSTREAM.EXE program and the MRIS data (called MRIS if you have not changed that during the INSTALL program). At the DOS prompt, type RPSTREAM and press Enter.

Several screens will be displayed after you press the Enter key that indicate the software is loading. The initialization process takes from a few to several minutes, depending on the personal computer you are using. When the system is loaded you will see the following screen (Figure 1). The first time you load the program, all the indices will need to be built which takes additional time.




status box/ \status box

**Figure 1. Main Menu**

### 1.4.2 Main Menu or Opening Screen

The **Main Menu** or opening screen presents three required steps for creating data retrievals. The **Main Menu** also displays several utility options and two status boxes at the bottom of the menu (Figure 1). The status boxes indicate the currently selected report output format (left hand) and the indexing order (right hand) that will be used to search through the database records.

To make selections you can:

1. Use the arrow keys to move down to the desired menu item and press Enter, or

2. Type the first or highlighted character or number of the menu item; this will position the highlight bar on the item. Press Enter to complete the selection.

Once you press the Enter key, you will be presented with a series of additional menus. You can select items from these menus in the same manner as just described.

## 1.5 ELEMENTS OF A RETRIEVAL

The MRIS Reporting Program allows you to search the MRIS data in a variety of ways. Several report formats are available that determine how much information is presented and how that information is arranged on the page or screen. In addition, there are options that allow you to save your data query or queried records for future use. The necessary steps to create a data query and report are discussed below.

**1.5.1 Design the Report.** There are three parts to designing retrievals for producing data reports (Figure 1).

**Step 1: Set up the Search.** This selection determines how you will look for data records and design the question you will ask. That is, will you use stream name, location, land ownership, fisheries, recreation, wildlife, or a combination of these and other available parameters to find information on a particular stream reach or group of stream reaches?

**Step 2: Select a Report Format.** This option allows you to select from several report formats, ranging from a one line summary to a full report of all available MRIS data.

**Step 3: Produce the Report.** This menu item starts the data search and production of the report. Data reports can be sent to the screen, to an ASCII file (for further word processing), to a printer, or to a record file.

**1.5.2 Utility Options.** The Main Menu also provides several user options (Figure 1).

**Verify Search Criteria and Report Format.** This item allows you to see the criteria you've selected in Step 1 and 2. **This makes it easy to see exactly what selections you've made and identify any mistakes so they can be corrected**

**prior to producing the report.** *It is important to use this feature to check your query - usually if a query does not run properly it is due to an error in the query, not the program.* Changing previous selections is discussed in Section 3.

**Save a Report Control File.** Selecting this utility option allows you to save your data query so they can be used again for future retrievals. This option would be most beneficial when you have designed a complex query that you will either use often or will be modifying for future queries. The option allows you to enter a file name to identify the file for future use.

**Retrieve a Report Control File.** This utility option retrieves a previously saved Report Control File as described above. A Report Control File contains all of the query and report options you selected in Steps 1 and 2. The Control File can be used to perform previously designed queries, or can be modified and executed to run a new query.

**Count Records Matching Search Criteria.** This utility option allows you to count the number of records that match your criteria before you produce your report or view your data. This allows you to narrow or broaden your search before you produce the report.

**Override Default Report Order.** The program is designed to select the most appropriate index based on the query and report you have created. Using this option allows you to choose a different index than the one the program selected. There may be situations when the user will want to override the default index selection. ***The right hand status box indicates the index automatically selected.***

## 2 EXAMPLES OF COMMON RETRIEVALS

The objective of the manual is to show you how to use the MRIS Reporting Program software to generate data queries and reports and use the utility options. *If you make a mistake when you are going through these examples, just remember to use the Escape key (Esc) to back up and return to the previous menu (or the menu selection,* ***Return to Previous Menu).***

There are basically four kinds of searches; selecting from a list, entering a single item, entering a range, or creating an ad hoc query from one or several databases. Several queries to demonstrate most features of the program will be used in the examples. All other query options will be covered in Section 5.

Throughout these examples, information will be provided to help familiarize you with

the menuing system, commonly used keys, and other software features. The examples assume the MRIS Reporting Program is loaded and the Main Menu is on the screen (Figure 1). If you are not at this point, please go back to Section 1.2 and go through the steps to install the MRIS Reporting Program. ***Keep in mind that some searches will take time; there are over 8,000 stream reaches in MRIS, and over 30,000 records in some of the individual databases. Features have been included in the programming to save the data selected by these lengthy queries and you will learn about those features as you go through the user's manual.***

## 2.1 A Simple Query - Selecting a stream name

**Step 1: Set up the Search -** The highlight bar is on **'Set up the Search'** in Figure 1 when the MRIS Reporting Program is first started. Choose this item by pressing the Enter key. The following menu will appear (Figure 2).

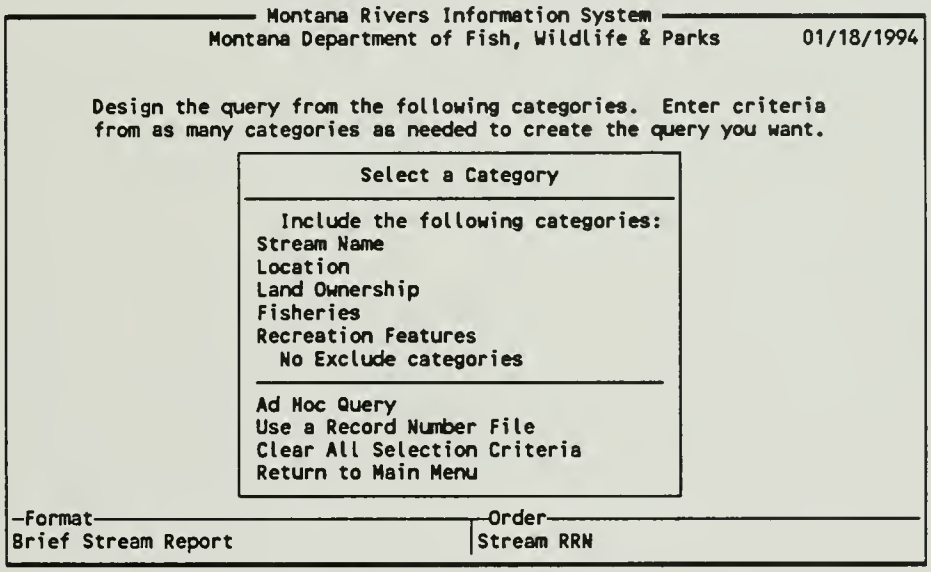



**Figure 2. Set up the Search**

The highlight bar is on **Stream Name** when the menu appears, press Enter to choose this option and bring up the next screen (Figure 3).

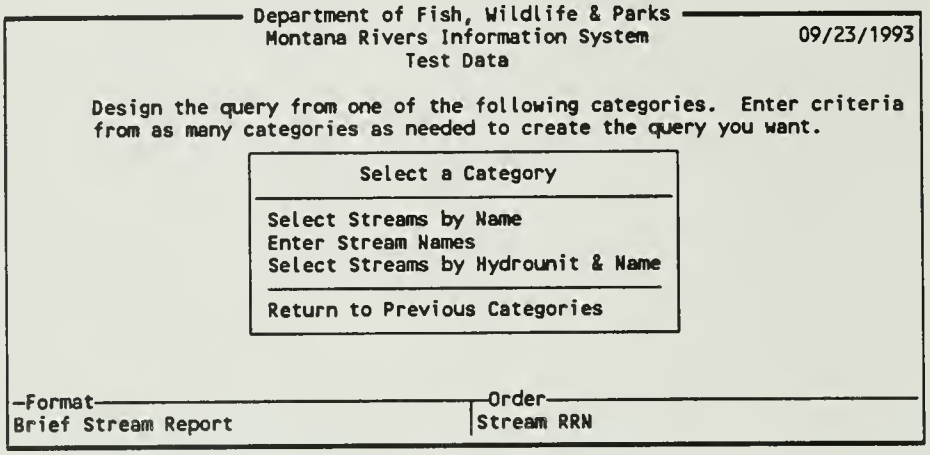

Department of Fish, Wildlife & Parks
Montana Rivers Information System
09/23/1993
Test Data
Design the query from one of the following categories. Enter criteria from as many categories as needed to create the query you want.
Select a Category
Select Streams by Name
Enter Stream Names
Select Streams by Hydrounit & Name
Return to Previous Categories
Format
Brief Stream Report
Order
Stream RRN

**Figure 3. Stream Name Menu**

You will notice there are three ways to find a stream name; **Select Stream by Name** (selecting streams from a pick-list in alphabetical order), **Enter Stream Names**, (entering or typing in a stream name), and **Select Streams by Hydrounit & Name** (selecting streams from a pick-list by their hydrounit plus their name). The latter two options will be explained in Section 5. The highlight bar will be on **Select Streams by Name**; press Enter and the master stream list will appear (Figure 4).

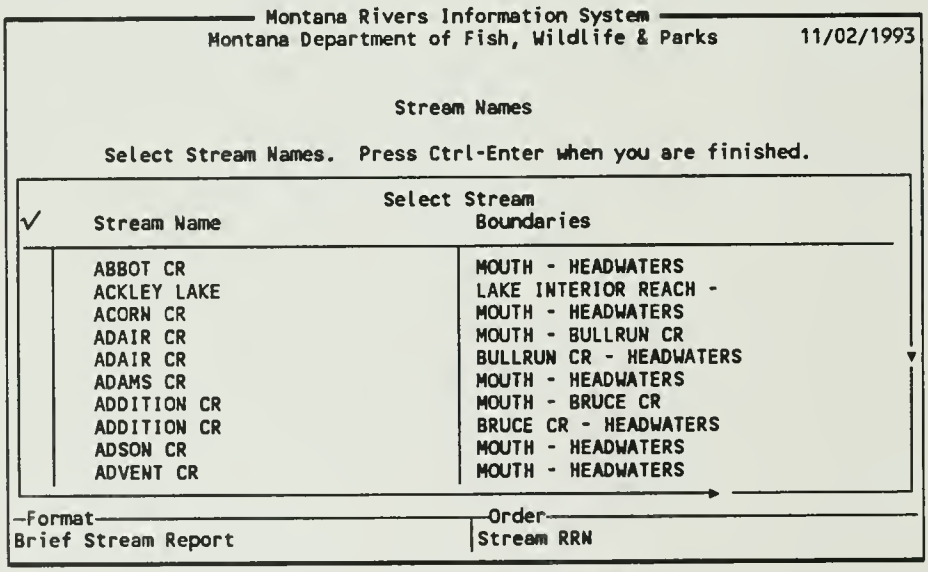

Montana Rivers Information System
Montana Department of Fish, Wildlife & Parks
11/02/1993
Stream Names
Select Stream Names. Press Ctrl-Enter when you are finished.
Select Stream
✓ Stream Name
Boundaries
ABBOT CR MOUTH - HEADWATERS
ACKLEY LAKE LAKE INTERIOR REACH -
ACORN CR MOUTH - HEADWATERS
ADAIR CR MOUTH - BULLRUN CR
ADAIR CR BULLRUN CR - HEADWATERS
ADAMS CR MOUTH - HEADWATERS
ADDITION CR MOUTH - BRUCE CR
ADDITION CR BRUCE CR - HEADWATERS
ADSON CR MOUTH - HEADWATERS
ADVENT CR MOUTH - HEADWATERS
Format
Brief Stream Report
Order
Stream RRN

**Figure 4. Selecting from a List**

Within this pick-list are the names of all the streams in the MRIS Stream Database in alphabetical order, their lower and upper boundaries, the hydrologic unit and river reach number (RRN). On the screen in Figure 4 you will notice a small triangle (▼)

on the right side and the bottom of the menu box. This indicates there is more information below the last line and to the right but there is not enough room to show it in the window. Use the arrow keys to move across the screen. To locate the stream reach of interest, you can use the up or down arrows; the page up or down keys; and Control Page Up (Ctrl-PgUp) or Control Page Down (Ctrl-PgDn), to move to the top or bottom of the list, respectively. With such a large data set, the MRIS Reporting Program also has a built-in search utility available. The utility can be activated after you enter a pick-list window by pressing the (Alt) key and the letter S at the same time. You can then begin typing the name of a stream and the cursor will locate the stream name as you type (the stream name will appear on the bottom of the screen as you type). Once you have located the stream reach, pressing enter deactivates the utility.

For this example, find Arrastra Cr (mouth to N Fk, 17010203 057 00.00, Section 0) using the search utility described above. Press Alt-S and begin typing the name of the stream. *(If you are working with only a subset of the master stream database (region, management area, etc.), these stream reaches may not be in your pick-list. Use two other stream reaches from your area for the example.* Once you have located the stream name from the pick-list, press Enter to deactivate the search utility. Select the stream by pressing Enter again. A check mark (√) will appear next to your selection and the highlight bar will advance to the next stream name. Next locate Kootenai R (Parmenter to Flower Cr, 17010101 035 00.00 Section 0), again using the search utility. (In future queries, you can select as many streams as you desire. If you want to change any selection and remove the check mark, place the highlight bar on the selected stream name and press Enter again. The check mark will be removed, indicating the stream name is no longer selected. *Selecting a stream from a pick-list insures that you are selecting a specific stream reach.*

Once you have selected the streams from the pick-list, press the Control (Ctrl) and Enter keys at the same time and you will return to the **Select a Category** menu (Figure 3) and the highlight bar will be on the menu item **Enter Stream Names**. Move down to **Return to Previous Categories** by pressing **R** or by using the Down Arrow key and Press Enter. You will return to the menu shown in Figure 2; move down to **Return to Main Menu** and press Enter.

**2.1.1 Step 2: Select the Report Format.** From the main menu, move to **Step 2** to select a report format and Press Enter. The next menu will appear (Figure 5).

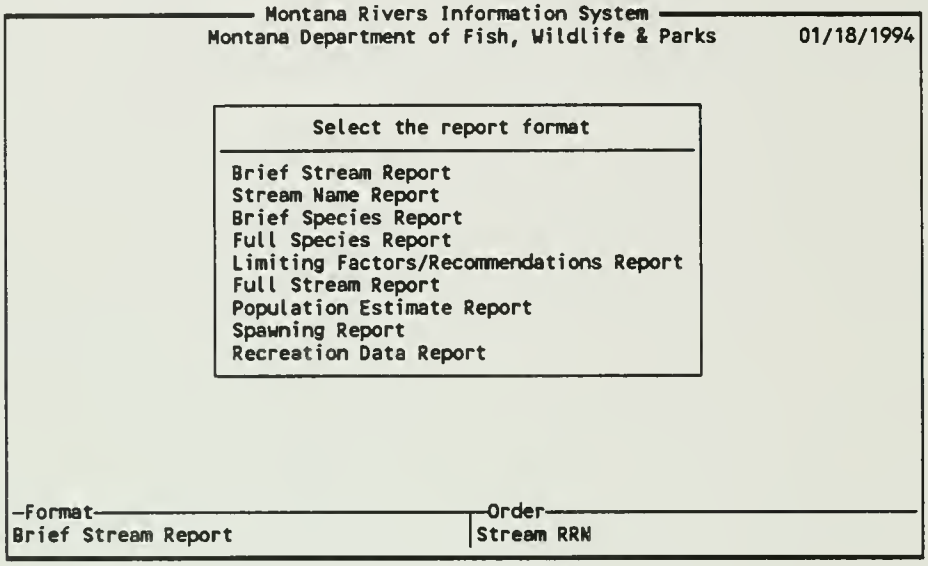



**Figure 5. Select the Report Format**

There are numerous reports that can be used to view the MRIS data. These reports range from a one line summary of stream reach data, to a brief report of the stream reach, to more specific reports for fish species, spawning, and recreational features, to a full report. The MRIS full report consists of twenty sections of information (this number will increase as more databases are added to the system) which you select **to exclude** from your full report.

For the example, we will use the Full Report option; this is the only reporting option where another menu will follow before you are returned to the Main Menu. *For all other reports, when you select the desired report and press Enter, that report will have been selected.* From the **Select the Report Format** screen, press **F** two times or use the down arrow keys to highlight the full report and press Enter. The menu shown in Figure 6 will appear on your screen.

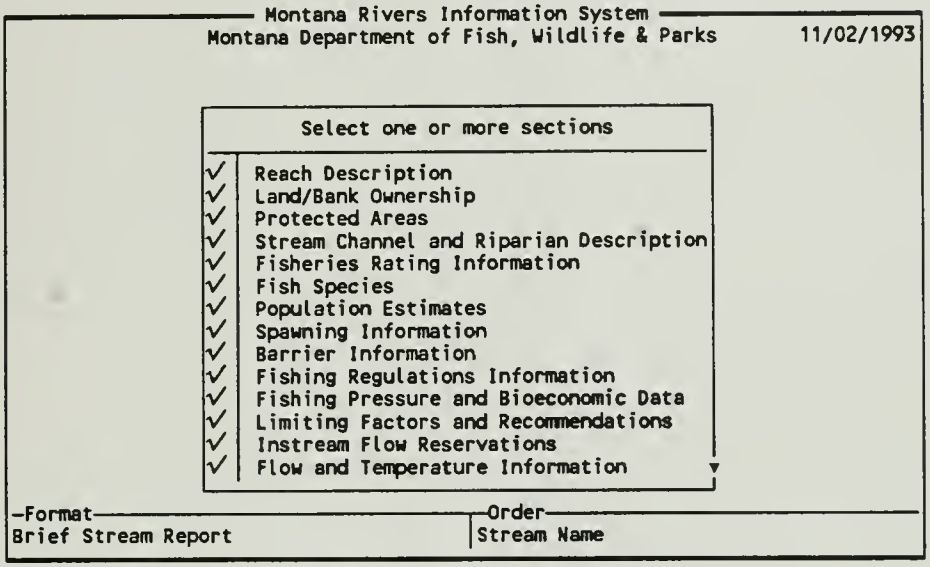



**Figure 6. Full Report Sections**

All of the sections are activated by default and will be included when the report is produced unless you exclude them. Pressing the Escape key (Esc) retains the default selections. *On the screen you will notice a small triangle (▼) to the right of the last line of the information window. This indicates there is more information below the last line but there is not enough room to show it on one screen.* Use the down arrow key to view the additional report sections. If you do not want to have a particular section or sections reported, you can deactivate it by moving the cursor to that section and pressing Enter. The check mark next to the selection will be removed indicating that it will not be included in the report. Ctrl-Enter finalizes the report design and you will be returned to the Main Menu will return to the screen.

> **After you complete this retrieval, you may want to return to the report selection menu and choose one of the other reports, and repeat the retrieval to see the difference in the report formats.**

Before proceeding, it is wise to examine all of the selections made up to this point. Move the cursor to **Verify Search Criteria and Report Format** under the Utilities portion of the Main Menu and press Enter.

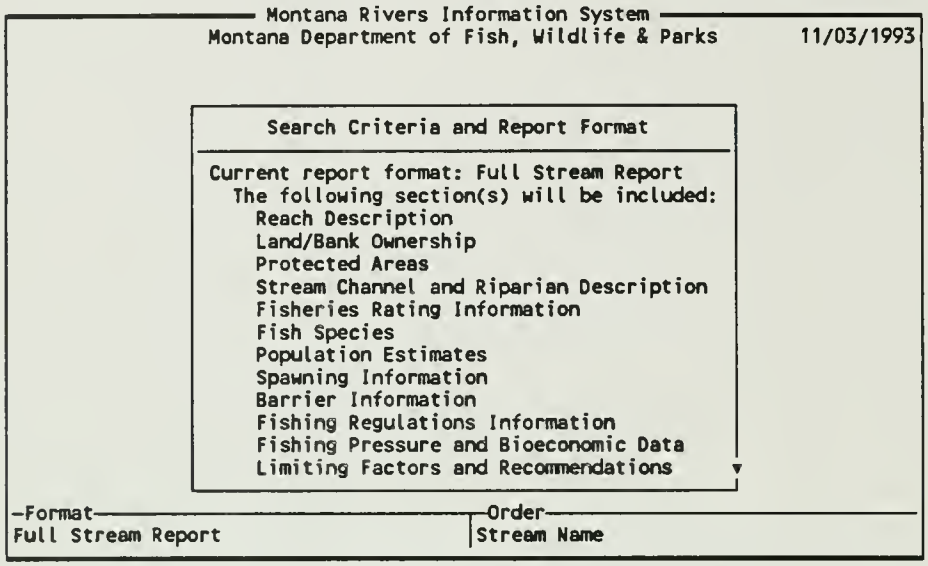



**Figure 7. Verify Search and Report Format**

On the screen in Figure 7 the various features of the report you have designed will be displayed. A small triangle (▼) to the right of the last line of the information window indicates there is more verification information below the screen. Use the down arrow key to view the additional information. **At this point, if you see something that is not intended, you have the opportunity to change it before producing the report by going back to the appropriate menu (See Section 3).** For this example, press Enter or use the Escape key (Esc) to return to the Main Menu.

**2.1.2 Step 3: Produce the Report.** Move to Step 3 on the Main Menu and press Enter. A new menu will appear that allows you to select where to send the report (Figure 8).

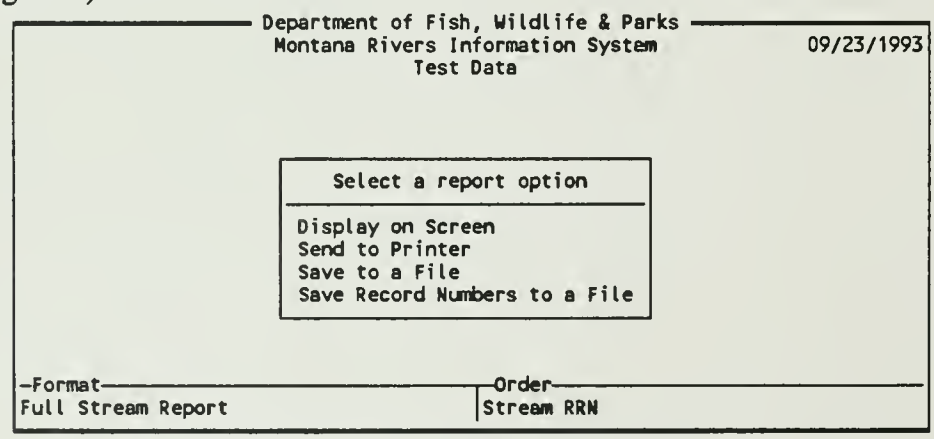



**Figure 8. Produce the Report Menu**

For this example, send the report to the screen by moving to **Display on Screen** and press Enter. You will then be given the opportunity to add additional titles to your report to clarify the information being displayed. In the case of a full report on two stream reaches, this probably would not be necessary so answer (y)es to the question **Are the additional page headings ok (y/n)?**

The computer will run for a short time prior to the report appearing on the screen (Figure 9).

```
                Montana Department of Fish, Wildlife & Parks      11/02/1993
                   Montana Rivers Information System

ARRASTRA CR
 MOUTH - ARRASTRA CR, N FK
                          ----------Reach Description----------
 Hydrologic Unit: 17010203 (Blackfoot)
 RRN: 05700.00    Short RRN: PC0570000    Section: 0         Length:   9.5 mi.
 From: MOUTH                             To: ARRASTRA CR, N FK
       10S 11W 11 CD   ( 0.0000/  0.0000)   09S 13W 25 D    ( 0.0000/  0.0000)
 Elevation: 4333.0  ft. (6)              Elevation: 5500.0  ft. (6)
 Tributary To: BLACKFOOT R                       County(ies): Powell
 Down Link: 1701020302800.00 (BLACKFOOT R)
 Up Link 1: 1701020317400.00 (ARRASTRA CR, N FK)
 Up Link 2: 1701020305701.00 (ARRASTRA CR)
 Map Name: DEARBORN RIVER                 Mountain Range(s):
 FWP:  Region: 2  District: Western  Serial: AFV  Water Code: 040150 001
 Tourism Region: Gold West

-Total--Scanned--Matched--Page-------------------------------------------------
  8845|       1|       0|    1|See the next screen (y/n)?      (Press V to view)
```

**Figure 9. Full Report (partial)**

The report will come up one screen at a time. At the bottom of the screen, beginning from the left, the MRIS Reporting Program reports the total number of records in the database, the number of records scanned during the current search, the number of records that match the query criteria, and the number of pages that have been viewed on the screen. **A prompt at the bottom of the screen asks "See the next screen (y/n)?". To view the next screen, press Y or the Enter key.** Repeat this step several times. At the bottom right corner, you will read **(Press V to View)**. Pressing **V** allows you to scroll back through the report and examine previously displayed screens. After pressing V, use the arrow or Page keys to move through the report. When you are done reviewing the records, press the Escape key (Esc). At this point, you can continue retrieving records to the screen by pressing Enter or Y, or end the search by responding with an **N** to the question **See the next screen (y/n)?**. Let's end the search. You will notice **End of the Report** appears at the bottom of the screen. Press Enter to return to the Main Menu. You have now completed the retrieval.

## 2.2 A More Complex Query - Fish Species, by Genetic Code, by Hydrologic Unit.

**Step 1: Set up the Search** - From the Main Menu, press Enter on **Step 1: Set Up the Search**, which will be highlighted. Move the cursor down to **Clear All Selection Criteria** and press Enter. This will clear the previous query from the program. A message will appear stating **All selection criteria have been cleared. Press any key.** Press any key to return to the **Select a Category** Menu.

For this example, we will first select a fish species to learn where it has been identified in MRIS. We will then narrow the criteria to include only a certain genetic code and a specific location. From the **Select a Category** menu, highlight **Fisheries** using the down arrow or by pressing **F** and press Enter. The menu shown in Figure 10 will appear.

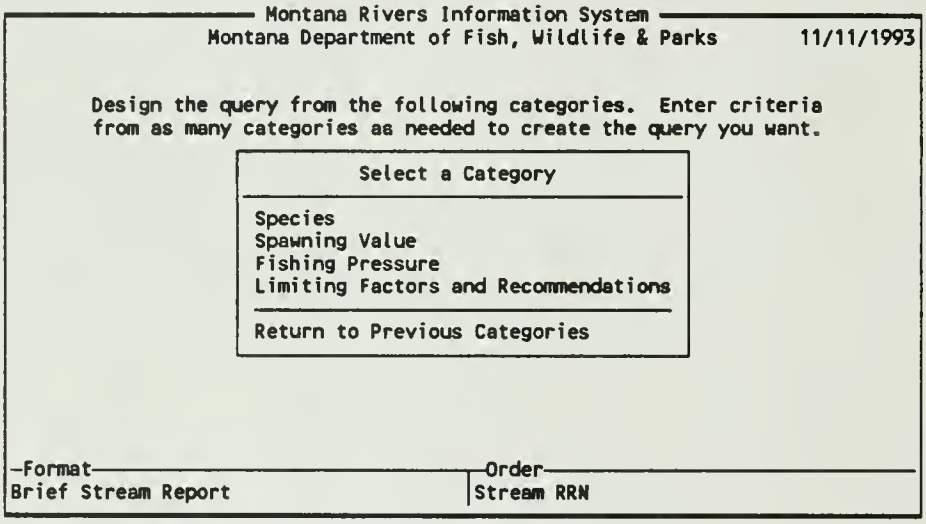



**Figure 10. Fisheries Menu**

For this search, we will begin by selecting a fish species; the highlight bar is on **Species** so press Enter. The menu shown in Figure 11 will appear. Select **Fish Species** from the menu and press Enter.

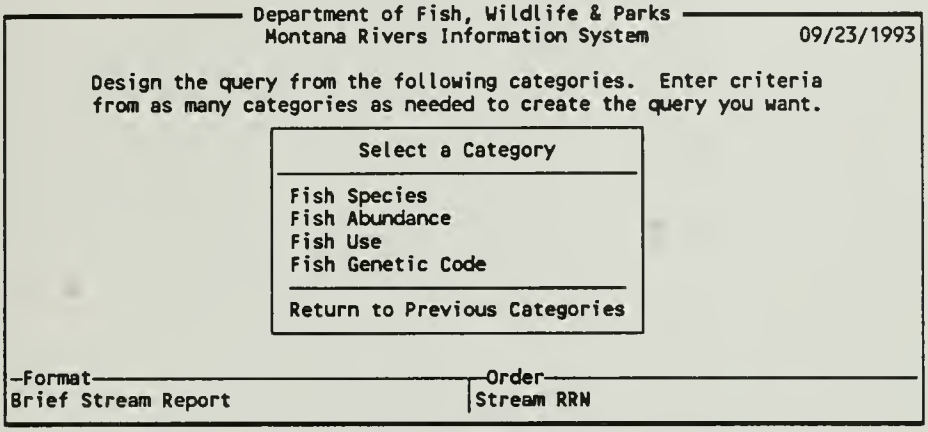



**Figure 11. Selecting a Fisheries Category Menu**

A pick-list of all the fish species in Montana by family will appear (Figure 12); we will be setting our search on **Westslope Cutthroat Trout**. Press the first letter of the family name, Trout, and the highlight bar will move to Arctic Grayling, the first trout species in alphabetical order. Because this is a two-tiered listing, pressing the first letter of the species will not get you to Westslope. The simplest way to move through this list is with the use of the Page Down and arrow keys until you highlight Westslope Cutthroat Trout. By pressing Enter a check mark will appear next to the species; pressing Ctrl and Enter at the same time will return you to the menu shown in Figure 11. Move the cursor down to **Return to Previous Categories** by pressing **R** or using the down arrow. Move through the menus in a similar manner until you are back at the Main Menu.

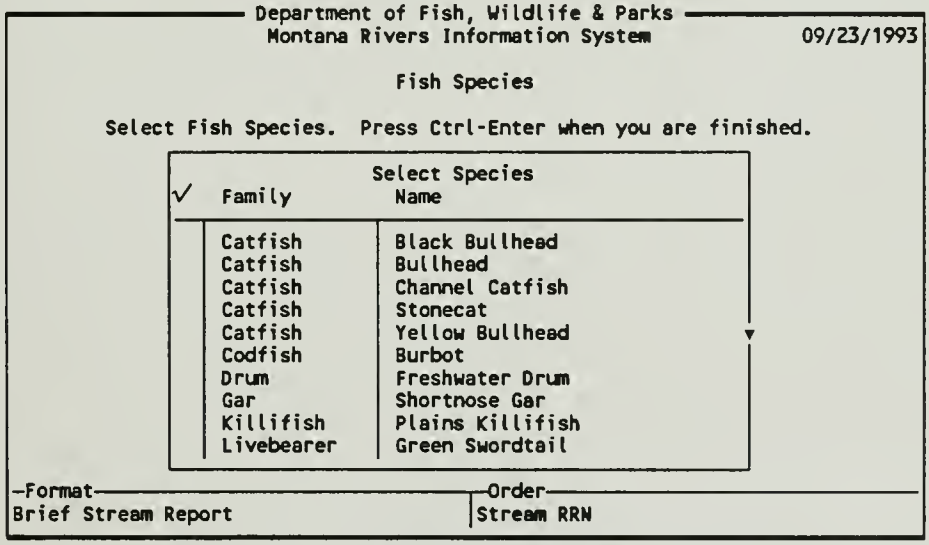



**Figure 12. Selecting a Fish Species Menu**

**Step 2 - Select a Report Format.** Move to Step 2 and press Enter. There are two ways of reporting species information; if you only want a list of the streams where a species is found, use the **Brief Species Report.** A **Full Species Report** will give you a listing of where the species are located plus information on the stream use, genetic and habitat code and species abundance. The **Full Stream Report** will give you all the streams where a species is found plus all the other species found in that stream reach (plus other data depending on the sections you have selected). For this example, we will select a **Full Species Report** by either pressing **F** or by using the down arrow keys.

You will now be at the Main Menu shown in Figure 1. At this point, your search should be checked by pressing **V** or use the down arrow to **Verify Search Criteria and Report Format.** Pressing Enter or Escape will return you to the Main Menu after you have checked your report criteria and format. *You will also notice that the Order Status Box will have changed from Stream Name to Fish Species, indicating the report order will be in fish species order and then by EPA River Reach Number order to hasten the query. There are over 35,000 records in the fish species database. This listing will not be in alphabetical order.*

**Step 3: Produce the Report.** To produce your report, press the number **3** or move the highlight bar to **Step 3: Produce the Report** and press Enter. The **Select a Report option** menu will appear, allowing you to select where to send the report (Figure 8). For this example, send the report to the screen by pressing Enter (it is already highlighted). You will then be given the opportunity to add additional titles to your report to clarify the information being displayed (Figure 13).

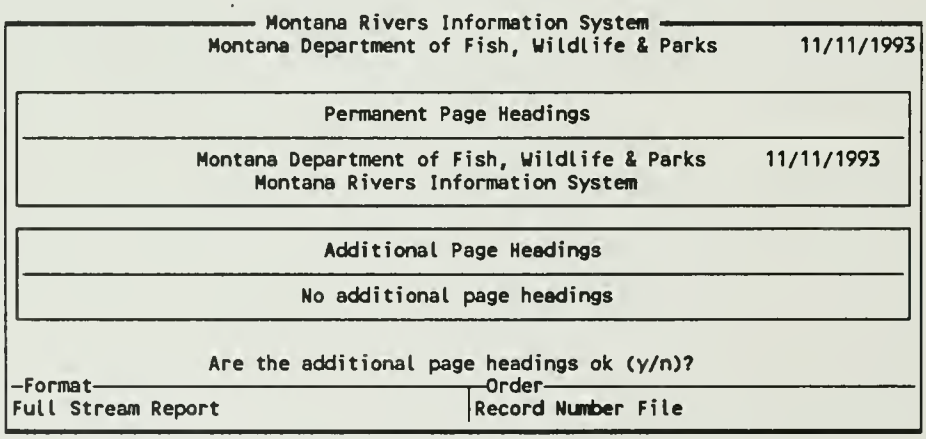

Montana Rivers Information System
Montana Department of Fish, Wildlife & Parks 11/11/1993
Permanent Page Headings
Montana Department of Fish, Wildlife & Parks 11/11/1993
Montana Rivers Information System
Additional Page Headings
No additional page headings
Are the additional page headings ok (y/n)?
Format
Full Stream Report
Order
Record Number File

**Figure 13. Adding Additional Headings to Page Screen**

For this report, let's answer **N** and type in the additional title **A Statewide Listing.** Press Ctrl and Enter at that the same time and you will be given the opportunity to

review your title before proceeding. Pressing **Y** will begin your report. The computer will run for a short time prior to the report appearing on the screen. A report similar to the one shown in Figure 14 will appear. This report gives you information on the stream reach location, the species use of the stream, its relative abundance, genetic code, status and other information about Westslope Cutthroat Trout.

```
                Montana Department of Fish, Wildlife & Parks       11/03/1993
                     Montana Rivers Information System
                              Species Streams

012      Westslope Cutthroat Trout
  10020001  (Red Rock)
    BEAR CR          02600.00 0  MOUTH - HEADWATERS
      Abundance: Common                          Use: Resident              (4)
      Genetic Code: Potentially pure with no record of contaminating species
      Habitat Code: Best habitat
      Historical Presence: Unknown
      Population Status: Unknown                      Survey Date:   /  /
    EVERSON CR       02900.00 0  BLACK CANYON CR - HEADWATERS
      Abundance: Present                         Use: Resident              (9)
      Genetic Code: Genetically pure, determined by electrophoresis
      Habitat Code:
      Historical Presence: Aboriginal
      Population Status: Unknown                      Survey Date:   /  /

-Total--Scanned--Matched--Page-------------------------------------------------
 36464|       3|       2|    1|See the next screen (y/n)?      (Press V to view)
```

**Figure 14. Full Species Report**

After viewing a few screens, you will notice that the query is providing you with all streams where Westslope Cutthroat Trout are present, regardless of whether they are pure populations, hybridized, or only potentially pure. Let's narrow our query to only those populations that have been verified to be genetically pure. As a screen finishes, press **N** to view the next screen, a message of **End of Report** will appear and by pressing Enter or any key, you will return to the Main Menu.

Press Enter from Step 1, select **Fisheries** from the **Select A Category** Menu and you will return to the fisheries menu shown in Figure 10. Select species from the species selection menu, move the cursor down to **Fish Genetic Code** and press Enter. A pick-list like the one shown in Figure 15 will appear.

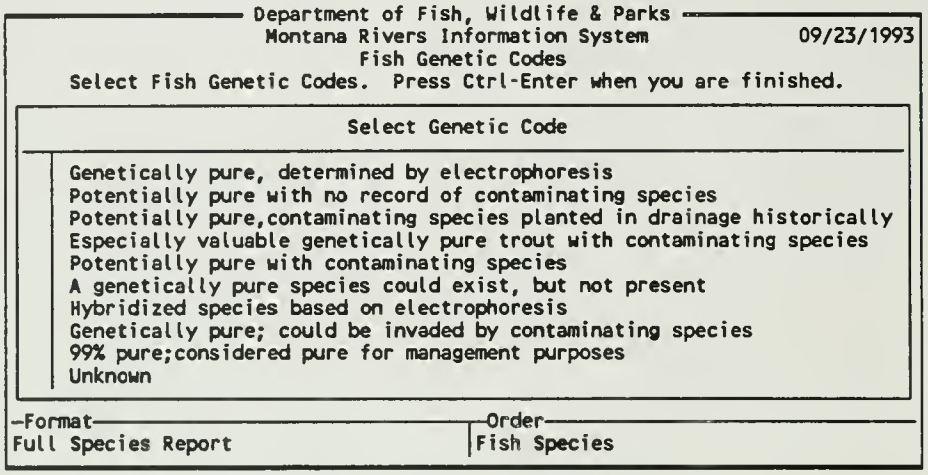

Department of Fish, Wildlife & Parks
Montana Rivers Information System
09/23/1993
Fish Genetic Codes
Select Fish Genetic Codes. Press Ctrl-Enter when you are finished.
Select Genetic Code
Genetically pure, determined by electrophoresis
Potentially pure with no record of contaminating species
Potentially pure,contaminating species planted in drainage historically
Especially valuable genetically pure trout with contaminating species
Potentially pure with contaminating species
A genetically pure species could exist, but not present
Hybridized species based on electrophoresis
Genetically pure; could be invaded by contaminating species
99% pure;considered pure for management purposes
Unknown
Format
Full Species Report
Order
Fish Species

**Figure 15. Genetics Code Pick-List**

Because we want to narrow our focus to only those populations that are genetically pure, we will select:

* **Genetically pure determined by electrophoresis;**
* **Especially valuable genetically pure trout with contaminating species;**
* **Genetically pure, could be invaded by contaminating species**; and
* **99% pure, considered pure for management purposes** by highlighting each selection and pressing Enter. A check mark will appear next to the four selections as they are chosen. When selections are complete, press Ctrl and Enter at the same time and you will return to the menu shown in Figure 11. Return to the Main Menu by using the **Return to the Previous Menu** selection on each menu.

At this point, verify the search to insure query correctness and then use Step 3 to produce the report to the screen. Change the title of the report to include a second line stating **Genetically Pure Populations Only**. The program may take longer to run now because of the second filter placed on it; it is now looking for not only Westslope Cutthroat populations, but only those that are genetically pure. Allow the program to produce a few screens of records before canceling the report.

We will put a final restriction on our query to reduce the number of records to a certain geographic area; in this case, all the streams in the Missouri headwater drainages. From the Main Menu, press Step 1 and the menu in Figure 2 will appear. Highlight **Location** and a menu similar to that found in Figure 16 will appear.

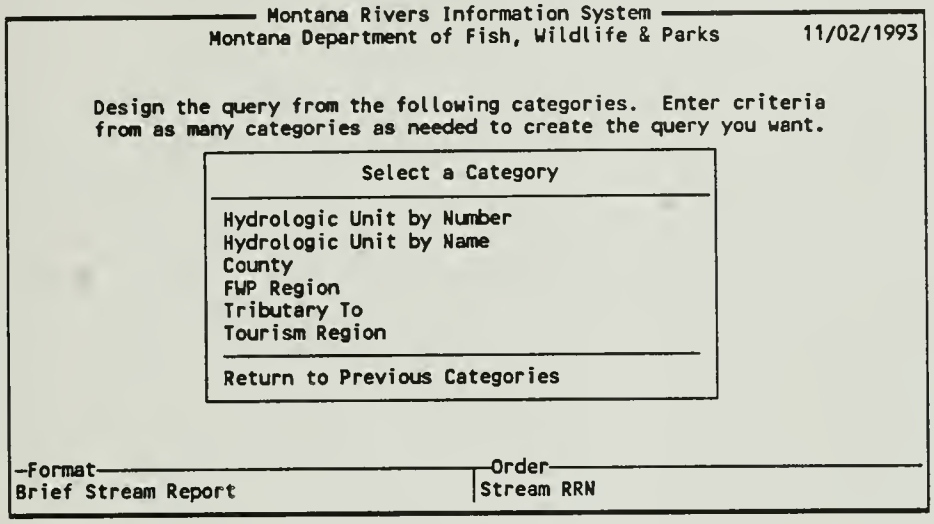



**Figure 16. Location Menu**

The highlight bar will be on **Hydrologic Unit by Number**; press Enter and the menu in Figure 17 will appear. *(If you are working with only a subset of the master stream database (region, management area, etc.), these hydrologic units may not be in your pick-list. Use other hydrologic units from your area for the example.*

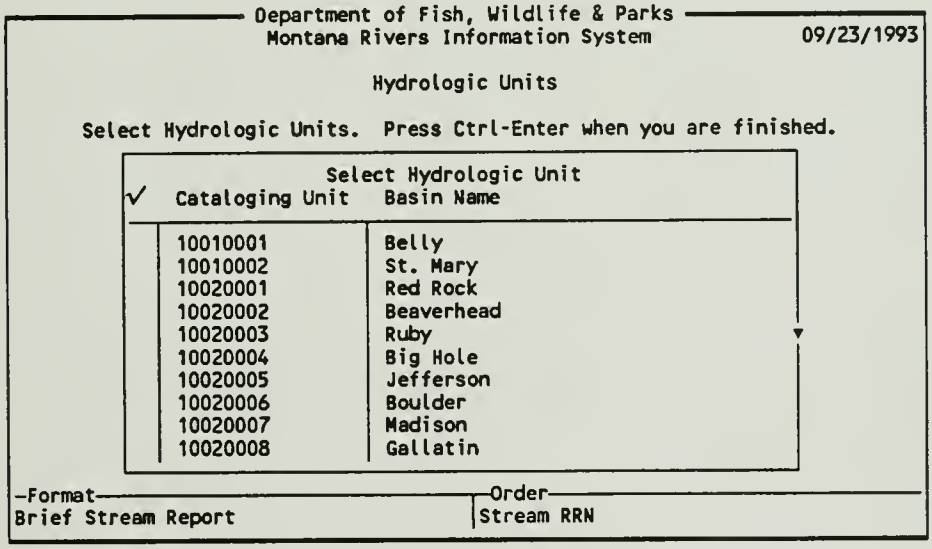



**Figure 17. Selecting by Hydrologic Unit Number**

To narrow our search to only streams in Missouri River headwaters drainage, move through the pick-list using the page down key or the Alt-S utility. The hydrologic units we are looking for are 10020001, 10020002, 10020003, 10020004, 10020005, 10020006, 10020007, and 10020008. (For a complete listing of hydrologic units, see

Appendix D-15). Select each one of these units by pressing Enter after the number and name is highlighted. Return to the Main Menu.

From the Main Menu, change the report format (Step 2) to **Brief Species Report**, return to the Main Menu and verify the criteria and report format you have selected by selecting that option from the Main Menu. Make sure you completely view the verification screen by using the down arrow key to insure you have the query you want; westslope cutthroat trout, four selections on genetic purity, and the hydrounits 10020001-10020008. *Go ahead and send the report to the screen again; since the report format was changed, you will have to re-enter or re-type the additional page headings.* Add a page heading to describe your geographic search limitation. View a few records before canceling the report. You have now completed a more complex query.

## 3 OTHER FEATURES OF THE MRIS REPORTING PROGRAM

From the examples presented above, you should now be familiar with the basic steps needed to query and produce a report using the MRIS Reporting Program software and menus. Other options and features of the system which are necessary to know to optimally use the system will be explained in the following section.

**3.1 Saving a Report Control File.** A Report Control File contains the instructions of the retrieval you just created. Sometimes a retrieval will be commonly used and/or added to, or has required a considerable length of time to produce. You can save a Report Control File with a unique file name and brief description. *(If you have exited the program, you may need to create a query for this example).* To try this option, select **Save a Report Control File.** The following screen will appear (Figure 18). The screen provides space for you to enter a brief description of the retrieval and a name for the new Report Control File. The description and file name have been filled in on screen below. Enter these on your screen and press Enter. If you select **Save a Report Control File** again, you can either overwrite the Control File you just saved, or you can save the current query selections under a new name and description. This option dies not save the records selected by the query, only the "instructions". These files are given the extension **.RCF.**

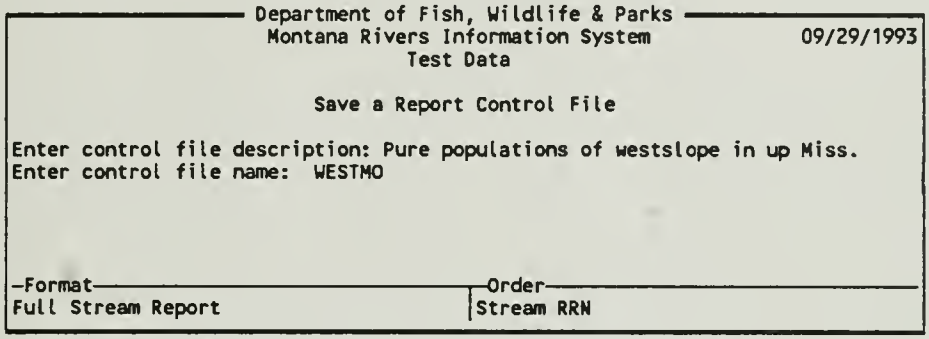



**Figure 18. Save A Report Control File**

**3.2 Retrieve a Report Control File.** When the Main Menu returns, select **Retrieve a Report Control File.** A menu showing the brief descriptions of previously saved control files appears. Select **WESTMO**, the one you just created and view the search criteria with **Verify Search Criteria and Report Format** utility. You can now modify the query, produce the report again, retrieve the data produced by the modified search, or save the modified query under a different name.

**3.3 Saving a Record Number File.** Saving a Record Number File is a handy feature when you have created a query that has taken some time to generate or one that is commonly requested (fish species of special concern lists, chronic dewatered streams, etc). This utility allows you to save **the selected records**, not just the query, so you can retrieve the records to use again.

After choosing **Step 3: Produce the Report,** from the Main Menu, choose **Save Record Numbers to a file.** A screen similar to the one shown in Figure 19 will appear; fill it in with the description and file name shown in Figure 19.

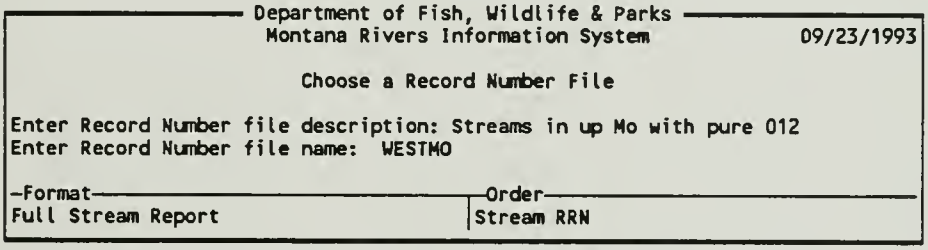

Department of Fish, Wildlife & Parks
Montana Rivers Information System
09/23/1993
Choose a Record Number File
Enter Record Number file description: Streams in up Mo with pure 012
Enter Record Number file name: WESTMO
-Format-
Full Stream Report
-Order-
Stream RRN

**Figure 19. Save a Record Number File Screen**

Let it run for a short time to allow a few records to be saved before pressing escape and ending the report. These files are given the extension **.RNF**.

### 3.4 Using a Record Number File

A Record Number File can be retrieved by pressing **Step 1: Set up the Search**, and then highlighting **Use a Record Number File** from the lower portion of the **Select a Category** menu (Figure 2). By highlighting this option, a screen similar to the one shown in Figure 20 will appear.

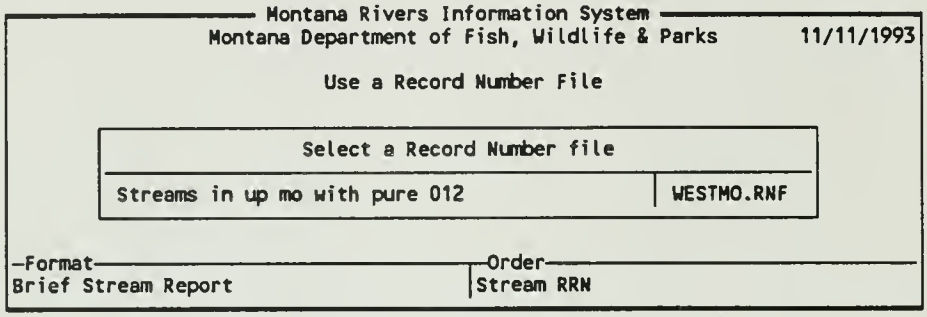



**Figure 20. Using a Record Number File**

From this menu, select the **WESTMO.RNF** by moving the highlight bar to the selection and pressing Enter. Return to the Main Menu and select **Verify the search criteria and format** to view the search criteria that goes along with the records selected. From the Main Menu, produce the report to the screen to view the records saved. At this point, you could further narrow your search using other menu items.

**3.5 Save a File** This option allows you to save your report to a file for further editing before you print it, or include it in another document as a table. The difference between **Save A Record Number File** and this option is that the records are only available in the report and would not be able to be modified or reselected. To produce the report, enter Step 3 and select **Save to a File.** A screen similar to Figure 21 will appear, allowing you to enter a file name. Enter **WSTCTMO.WP** for a file name. The report will take some time to produce (the program is finding the records that you queried and writing them to a file); you may want to do some other work at this time or continue to familiarize yourself with the manual. You will know the report is working by the changing matched and scanned status boxes in the bottom left hand corner. When the report is finished, you will be returned to the Main Menu. From here, you can exit the program by highlighting **Exit the Program** from the Main Menu; (see Section 4 to review exiting the system). DO NOT delete any files at this point, so you can continue with the exercises. Once you exit the program, you will be returned to the DOS prompt in the MRIS directory.

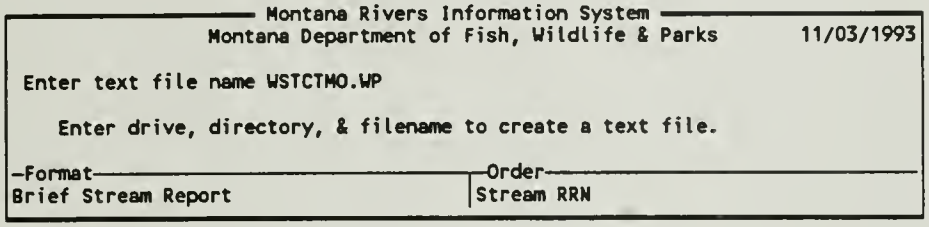



**Figure 21. Save Report Control File Screen**

From the DOS prompt, load your word processing program (WP for word perfect,etc.) and retrieve the file **WSTCTMO.WP**. You can now manipulate the document to include it in a report by changing the titles, page breaks, bolding, underlining, etc. (Figure 22).

**A FEW WORD PROCESSING TIPS**

If you are printing out a report, you will want to use a font that is not proportional; i.e., a Courier 10 pt works well. You may also need to reset your left/right and top/bottom margins to a smaller margin to get the correct page breaks the report has been designed for. Check a few pages before you begin printing out the report. The reports were designed using a dot matrix printer.

**Want to block out and delete a column that is in the report?** Place your cursor at the beginning of the column you want to delete; turn block on and arrow down the entire page to the end of the document; Ctrl F4, select 3 (Rectangle), and 3 (Delete).

Table 1. Genetically Pure Westslope Cutthroat Trout Populations in the Missouri River Headwater Drainages.

**Red Rock River Drainage**

| Stream Name | Lower and Upper Boundaries |
|---|---|
| EVERSON CR | BLACK CANYON BROWNS CR - HEADWATERS |
| MUDDY CR | WILLIAMSON WOOD CANYON - MCNINCH CR |
| SIMPSON CR | MOUTH - HEADWATERS |
| JONES CR | MOUTH - HEADWATERS |
| RAPE CR | MOUTH - HEADWATERS |
| BEAN CR | MOUTH - HEADWATERS |
| PAINTER CR | BROWNS CR - HEADWATERS |
| BROWNS CR | MOUTH - HEADWATERS |

**Beaverhead River Drainage**

| | |
|---|---|
| DYCE CR, E FK | MOUTH - HEADWATERS |
| POLE CR | MOUTH - HEADWATERS |
| BUFFALO CR | BRAYS CANYON CR - HEADWATERS |

**Figure 22. Edited Document in Word Perfect**

When you have finished editing your report using your word processing program, you can send it to the printer. If you choose to continue with this session, reenter the Reporting Program by typing **RPSTREAM** from the DOS prompt in the MRIS directory and press Enter.

### 3.6 Changing Search Criteria

Before you try another retrieval with different search criteria, you need to deactivate your previous menu selections. Previous search criteria will remain active until you return to the specific menu selections and deactivate it, or until you exit the MRIS Reporting Program. Failing to deactivate the previous search criteria can cause subsequent searches to fail or produce erroneous results. Currently selected search criteria can be viewed using the **Verify Search Criteria and Report Format** option from the Main Menu (Figure 1). The following example shows you how to deactivate the previous search criteria.

If you want to clear all of the previous search selections, you can do so by selecting

Step 1 from the Main Menu and then **Clear All Selection Criteria** from the **Select a Category** menu. Pressing any key will return you to the **Select a Category** menu. *f you are following the manual and have exited the program, you will need to* ***Retrieve a Report Control File*** *to continue. Select this option from the Main Menu, retrieve* ***WESTMO*** *and you are ready to begin again. Check to retrieval by using the option Verify Search Criteria.*

If you elect to focus the next search to only the Big Hole hydrologic unit (10020004) for Westslope Cutthroat Trout, you will need to use the menus to clear the other hydrologic units currently in the search. Since we have just cleared the selection criteria, let's retrieve it using the **Retrieve a Control File** from the Main Menu. Move to and highlight **WESTMO** and Ctrl-Enter to activate that criteria.

From the Main Menu, select **Step 1**, then **Location** from **Select A Category** menu, and finally, **Hydrologic Unit by Number** from the **Location** menu. When you select this category, the MRIS Reporting Program indicates that other hydrologic units have already been selected and presents the following menu prompt (Figure 23). *(If you are working with only a subset of the master stream database (region, management area, etc.), these hydrologic units may not be in your pick-list. Use other hydrologic units from your area for the example.)*

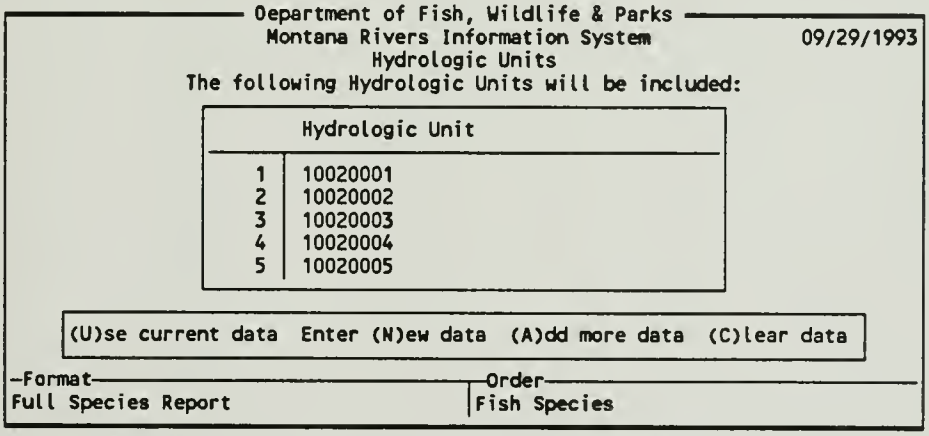



**Figure 23. Change Hydrologic Unit Selection Screen**

Typing **U** retains the current selection, **N** eliminates the current selection and allows you to enter new streams, **A** retains the current selection and allows additional selection to be made, and **C** eliminates all stream search criteria. These four options are presented for all menu items when you return to change them. Remember that you can view the currently selected search criteria at any time with the **Verify Search Criteria and Report Format** option on the Main Menu.

### 3.7 Overriding Default Report Order

Most of the stream listing reports (population estimate, fish species, etc) are in EPA River Reach Number as the default report order. This report order has been chosen as the most efficient way for the system to operate. If you want your report in alphabetical order, choose this option to receive a listing of other report orders. After making a selection from this menu, you will receive a message that this is not the . *Keep in mind, that the report will probably run a little slower due to changing the report order.*

## 4 EXITING THE SYSTEM

When you have finished with your session for the day, exit the program by returning to the Main Menu (Figure 1) and highlighting **Exit the Program.** If, while you were working, you saved either report control files or record number files, a screen will appear similar to the one shown in Figure 24. This gives you the opportunity to save a report control file or record number file, or to remove them if you no longer want them in the system. **The files you select will be deleted, not saved.** By pressing Enter a check mark appears next to the file, marking it for deletion; by pressing Ctrl-Enter your selections will be accepted. Once you exit the program, you will be returned to the DOS prompt in the MRIS directory.

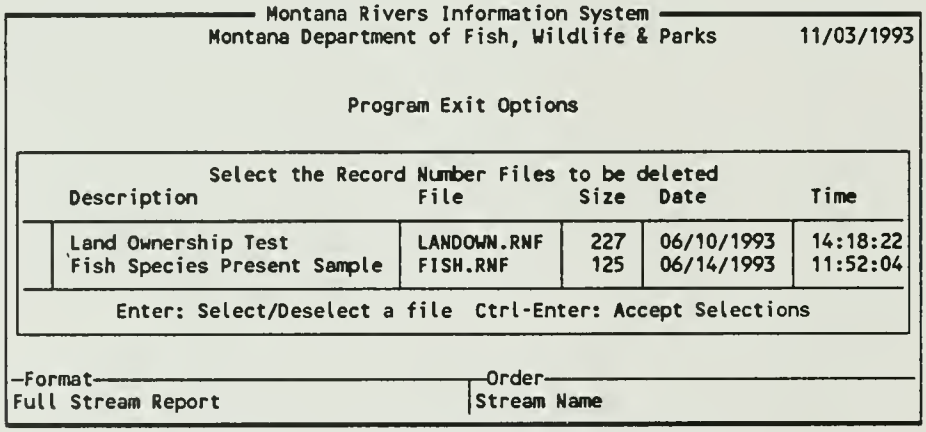



**Figure 24. Exiting the Program screen**

## 5 ADDITIONAL SEARCH OPTIONS

The MRIS Reporting Program software provides a variety of data search and query options. Many of these can be used in conjunction with each other, as you have seen in the above examples. A general rule to follow: *"AND" statements are set up between queries, "OR" statements are set up within queries.* All of these query options require some

information before they can be executed. This section presents examples of the additional search option listed in Figure 2, and shows the type of information each option requires. Options that have been used in the previous search examples will not be discussed. Before you proceed, be sure previously selected criteria are deactivated.

The searches are titled according to the selections you choose from each menu beginning with the **Main Menu**; i.e., to enter stream names: from the **Main Menu**, select Step 1; from the **Select a Category**, select Stream Name; and from **Stream Names**, select Enter Stream Names.

**5.1 Main Menu - Set up the Search - Stream Name - Enter a Stream Name.** Stream Names can be entered by typing them in after you highlight **Enter Stream Name** from the Stream Names Menu and press Enter. The screen shown in Figure 25 will appear.

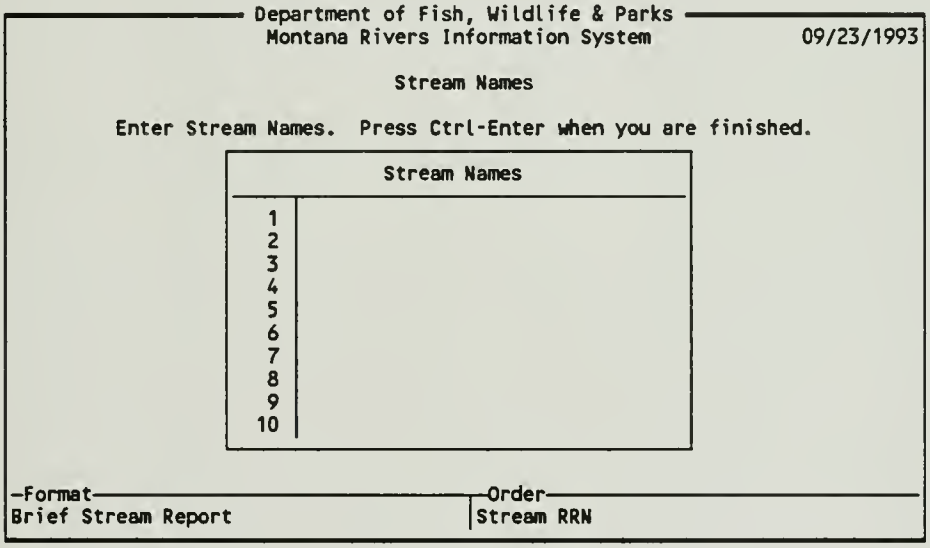



**Figure 25. Entering a Stream Name Menu**

This screen allows you to enter an unlimited number of stream names that you wish to query by typing them in yourself. *Be cautious; the names need to be entered as they appear in the master stream database. You may want to refer to the MRIS stream list you have been sent. Some basics include:*

1) R for River
2) Cr for Creek
3) Flathead R, N Fk -**not**- N Fk Flathead R

The advantage of using this option, rather than selecting from a pick-list, is that you only have to enter a stream name once rather than selecting each reach of a particular stream. The disadvantage to using this option is that you will get all streams with that name, not just the one you want.

### 5.2 Main Menu - Set up the Search - Stream Name - Select Streams by Hydrounit & Name

The list of streams in the MRIS Master Stream Database by Hydrologic Unit in river reach number order will be the pick-list available in this menu item (Figure 26). Streams can be selected by moving the cursor to the desired stream name and pressing Enter. The pick-list search utility can be used to position the cursor on the desired hydrologic unit by pressing Alt-S and typing the number of the Hydrologic Unit (See Appendix D-15 for a list and map of hydrologic units in Montana) and then searching for the desired stream by using the page down or arrow keys. Pressing Ctrl-Enter finalizes the selections and returns you to the Stream Name menu.

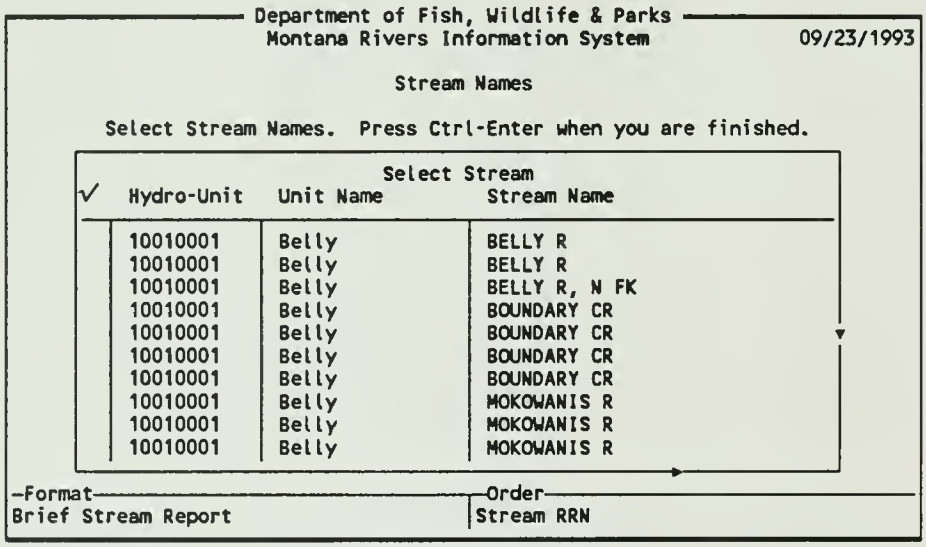



**Figure 26. Selecting Streams by Hydrounit & Name Screen**

### 5.3 Step 1: Set up the Search - Location - Hydrologic Unit by Name, by County, by FWP Region or Tourism Region.

There are several other options under **Location** on the Figure 2 menu. **Hydrologic Unit by Name**, **County**, **FWP Region**, and **Tourism Region** are four pick-lists which list the

names of all the hydrologic units, counties, FWP Regions, and Tourism Regions, respectively (Figures 27, 28, 29 and 30, respectively). Items on each of these menus are selected by moving the cursor to the desired location and pressing Enter. The (▾) on the hydrologic units and county pick-lists indicate that there is more information that could not be completely displayed on screen. Selections are finalized by using Ctrl-Enter, and the **Location** menu returns. Additional options from the **Location** screen can be selected at this time, if you want to combine several location items in your query (i.e. all the stream reaches in the Blackfoot hydrologic unit that are also in Missoula County).

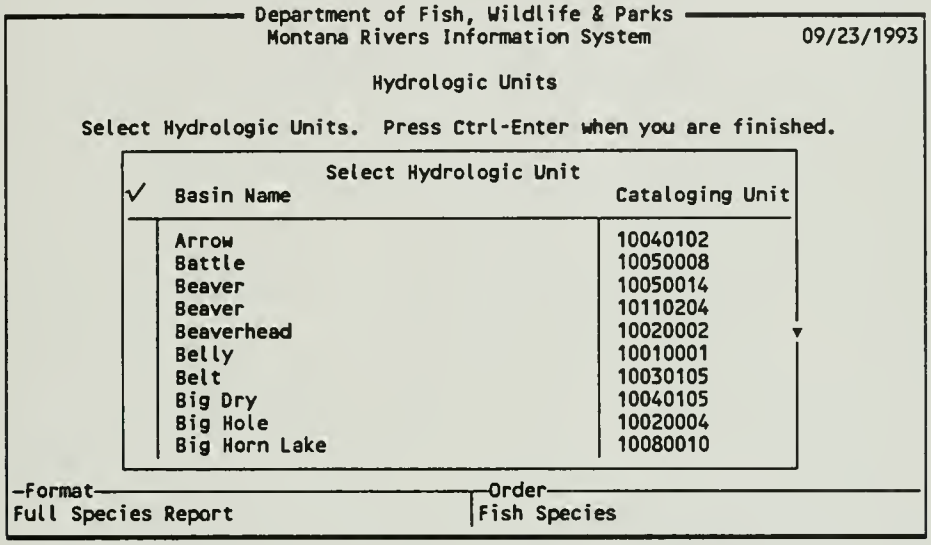



**Figure 27. Hydrologic Unit by Name Pick-List.**

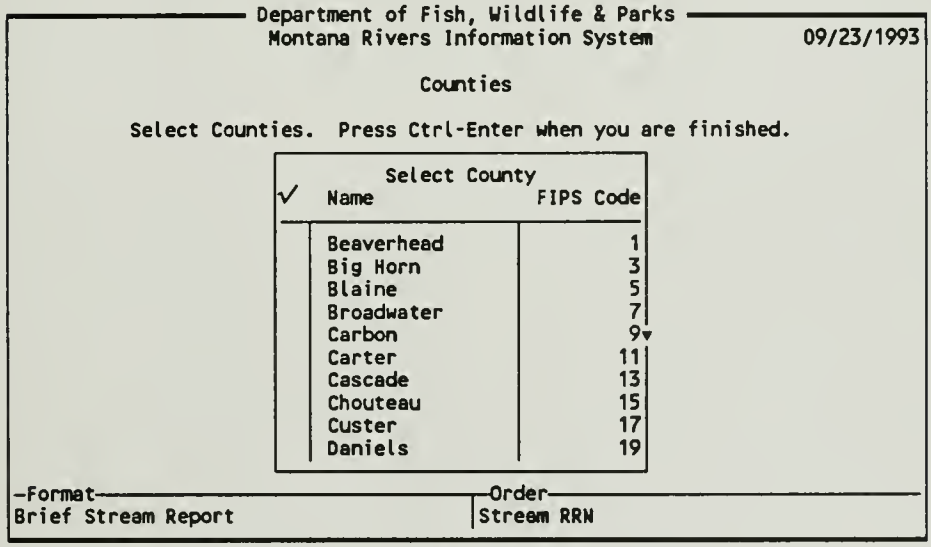



**Figure 28. Selecting by County**

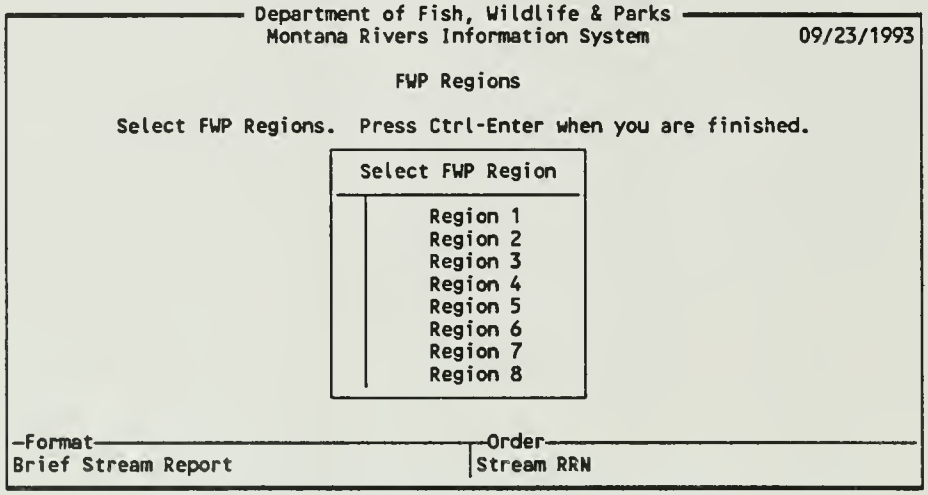



**Figure 29. Selecting by FWP Region**

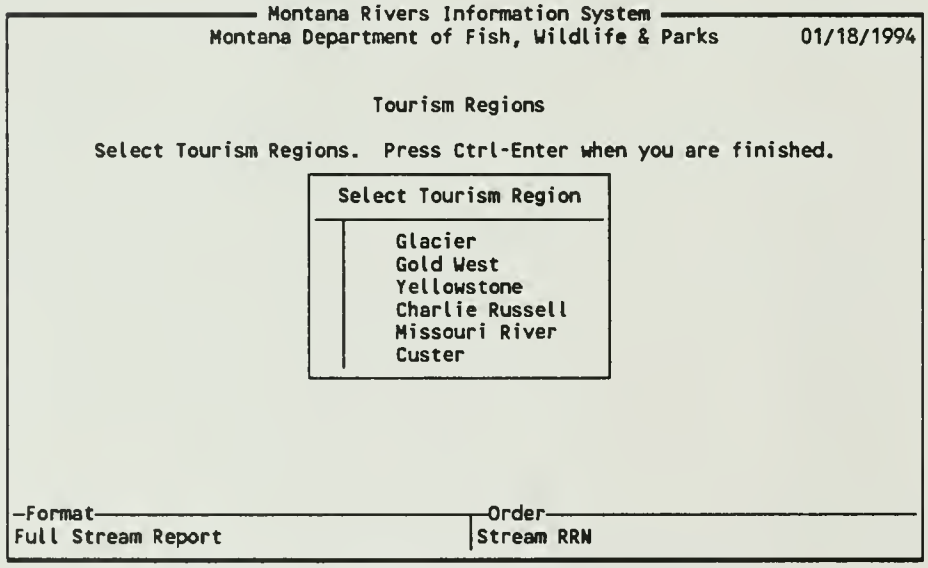



**Figure 30. Selecting by Tourism Country**

## 5.4 Step 1: Set up the Search - Location - Tributary To

The last options under the **Location** menu allows you to select streams by the body of water they are a tributary to. By highlighting **Tributary To** and pressing Enter, a screen similar to the **Stream Name** menu will appear (Figure 31). You may enter a tributary to by name **(Enter Tributary To Names)** or select a tributary to from a pick-list that is by **Hydrologic Unit and EPA River Reach order** or in alphabetical order **(Tributary To by Name)**. These three options are exactly like using these options under **Stream Name**

(Sections 5.1 and 5.2).

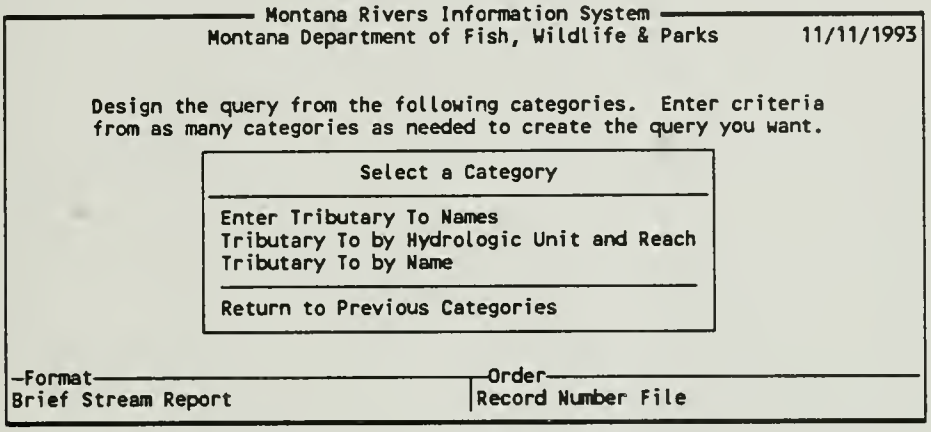

Montana Rivers Information System
Montana Department of Fish, Wildlife & Parks
11/11/1993
Design the query from the following categories. Enter criteria
from as many categories as needed to create the query you want.
Select a Category
Enter Tributary To Names
Tributary To by Hydrologic Unit and Reach
Tributary To by Name
Return to Previous Categories
Format
Brief Stream Report
Order
Record Number File

**Figure 31. Tributary To Menu**

## 5.5 Step 1: Set up the Search - Land Ownership

This search requires selections from two menus; the first screen allows you to select a land ownership sector (Figure 32) and the second menu allows you to pick an agency or agencies within that ownership sector (Figure 33).

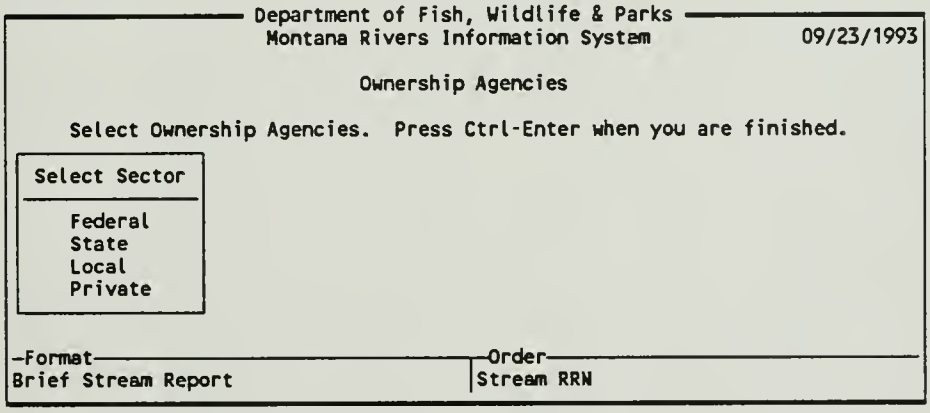



**Figure 32. Selecting Major Land Ownership Type**

Once a sector is selected, agencies can be selected by moving the cursor to the desired agency code and pressing Enter (Figure 33). The pick-list search utility can be used to position the cursor by pressing Alt-S and typing the agency name. Pressing Ctrl-Enter finalizes the selections and returns you to the **Select a Category** menu.

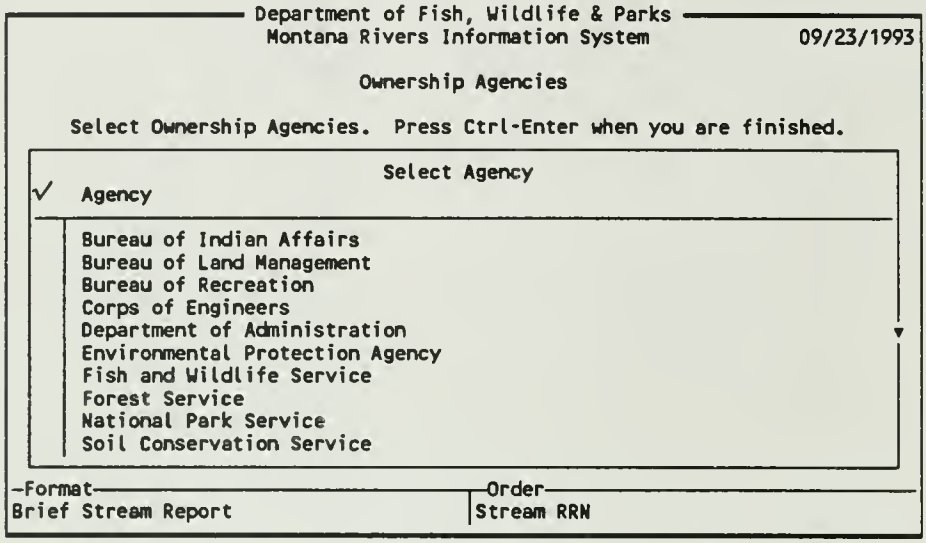



**Figure 33. Selecting Land Ownership Agency Menu (after Federal Sector selection)**

## 5.6 Step 1: Set Up the Search - Fisheries - Species - Fish Abundance or Fish Use

Pick-lists are used to select relative fish abundance(s) or fish use(s) in a stream reach. From the **Species** menu shown in Figure 11, selecting **Fish Abundance** will produce a screen similar to that shown in Figure 34.

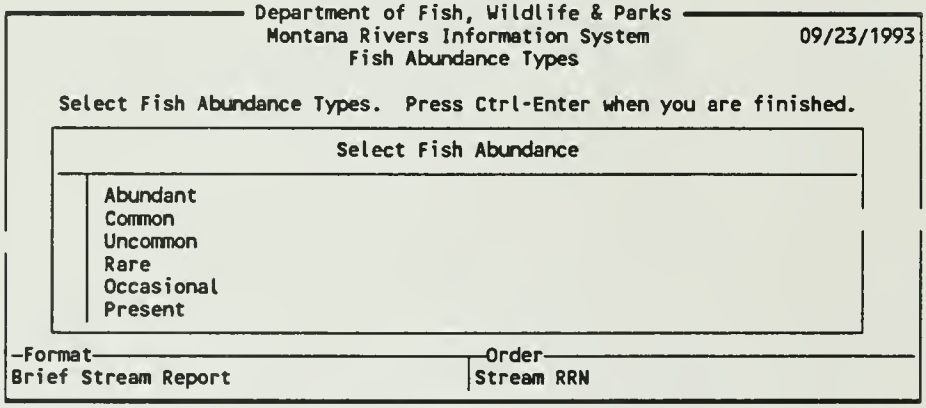



**Figure 34. Fish Species Abundance Pick-list.**

Fish abundance can be selected by highlighting the abundance(s) of interest and pressing Enter. A check mark will appear next to the selection. You can choose as many fish abundance choices as desired, and they can be used in conjunction with any other fish species categories. Making no selections will provide the user with all records of a certain

species regardless of their abundance. The **Fish Use** is set up in the same manner (Figure 35).

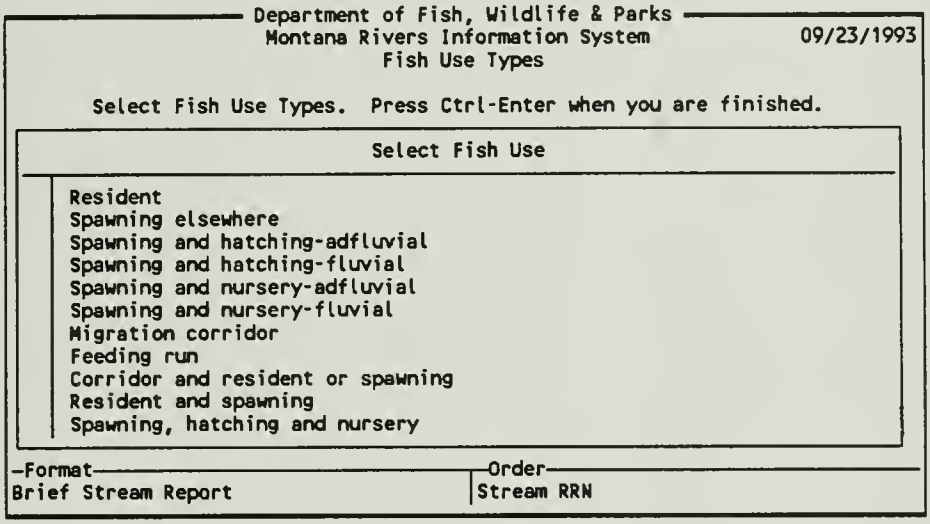



**Figure 35. Fish Use Menu**

## 5.7 Step 1: Set Up the Search - Fisheries - Spawning

Streams have been identified and rated as to their spawning habitat importance to a larger body of water. To select a group of streams by their spawning value, highlight **Spawning Values** from the main Fisheries menu and a screen similar to Figure 36 will appear. From here, one or more values can be selected. Ctrl-Enter finalizes your selections. Using this menu, select **Essential** in conjunction with **Tributary To** and entering the Yellowstone R., would give you all the essential spawning habitat (or corridor) for the Yellowstone River.

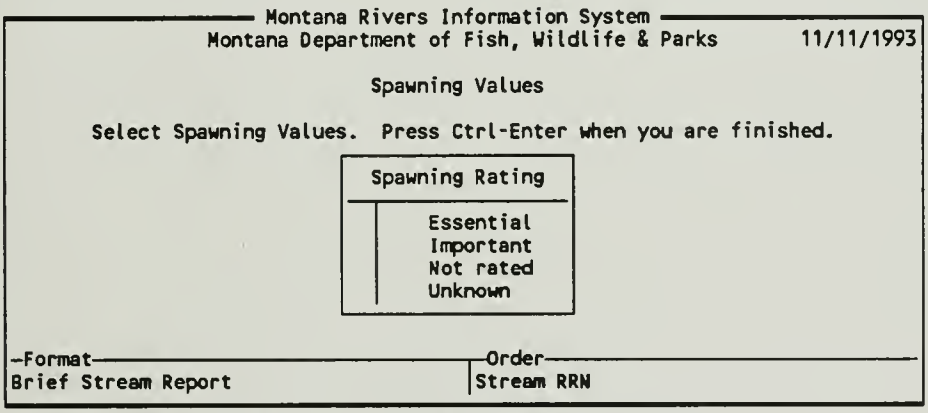



**Figure 36. Spawning Value Menu**

### 5.8 Step 1: Set up the Search - Fisheries - Fishing Pressure

The program allows you to select a set(s) of records that have fishing pressure as estimated by the MDFWP Mail Surveys. These ranges can be entered for **Total Fishing Pressure**, **Resident Fishing Pressure**, or **Nonresident Fishing Pressure** (Figure 37). To enter a range for fishing pressure, select **Fisheries** from the **Select a Category** menu followed by the selection of **Fishing Pressure** from the Fisheries menu. From the Fishing Pressure menu, select the type of fishing pressure you wish to enter a range for. Depending on which type of fishing pressure you are interested in, a screen similar to Figure 38 will appear.

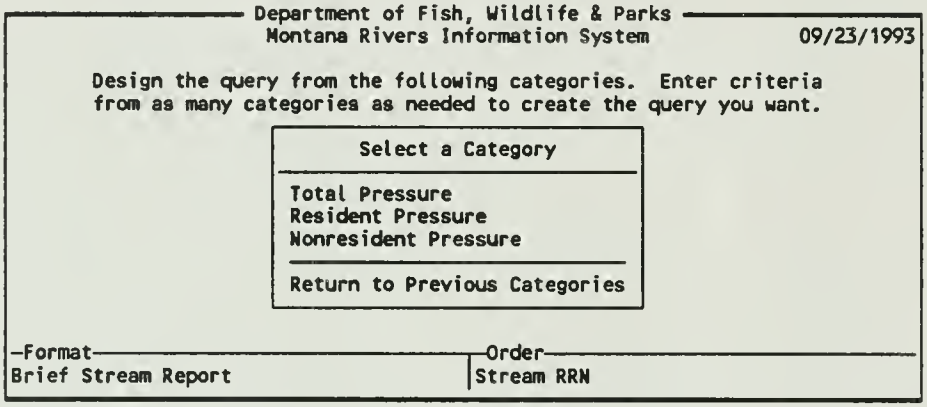



**Figure 37. Fishing Pressure Menu**

From here, enter as many ranges that you care to. It may be easiest to learn the potential of fishing pressure ranges by using the documents **MDFWP Fishing Pressure - 1992** available at all MDFWP Regional Headquarters or by contacting Bob McFarland, MDFWP, 994- 6355.

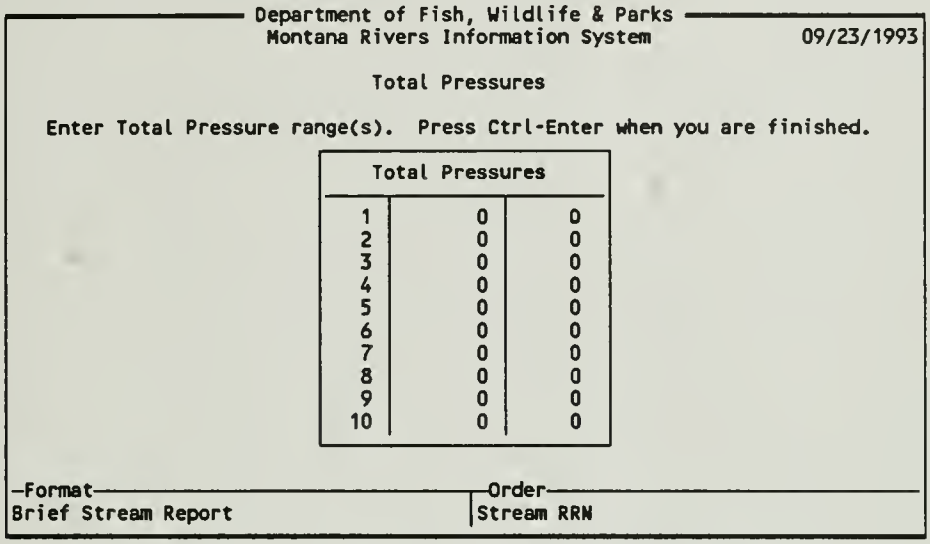



**Figure 38. Entering a range of Fishing Pressure**

## 5.9 Step 1: Set up the Search - Fisheries - Limiting Factors/ Management Recommendations

Many of the factors that limit a fisheries in a stream reach, as well as management recommendations to improve the fisheries, have been identified. For a complete listing of the limiting factors that have been identified, see Appendix D. This search requires two levels of selections, first to identify the management practices causing the limiting factor (Figure 39) and then selecting the limiting factor (Figure 40). Again, these selections can be mixed with any of the categories in Figure 39. **Keep in mind, some stream reaches may not have their limiting factors identified as of yet.** Within a category, an **OR** statement is established when two or more selections are checked; i.e., chronic dewatering or excess siltation and turbidity. Between categories, however, an **AND** statement is established; if chronic dewatering is selected from Agricultural Limiting Factors and Physical Limiting Factors, it has to be identified as being chronic dewatered by agricultural and other physical factors. **There is also a report format for reporting limiting factors; be sure to use this report from Step 2 in order for the report to run most efficiently.**

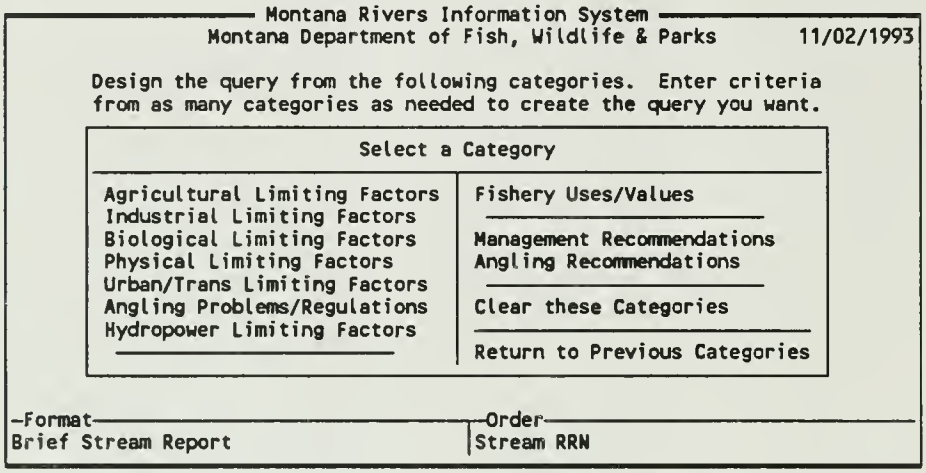



**Figure 39. Limiting Factors and Recommendations Menu**

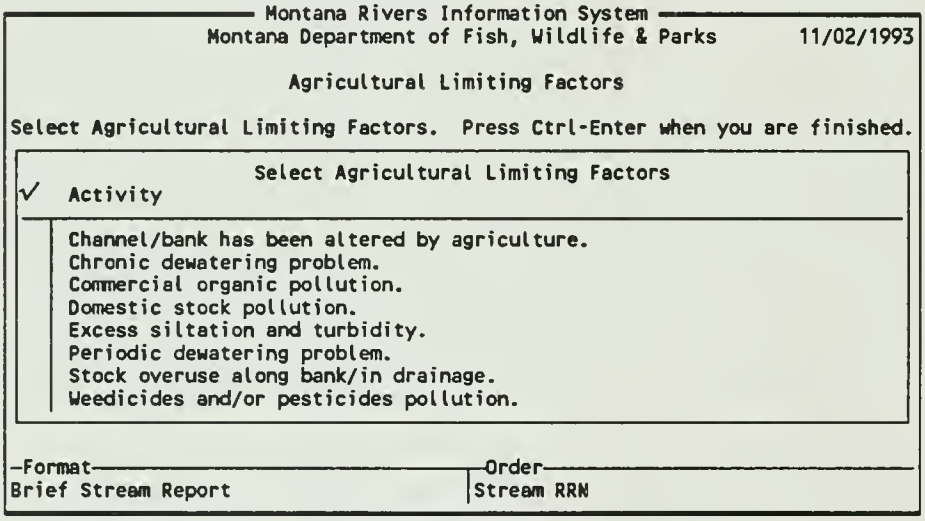



**Figure 40. List of Limiting Factors from One Category**

## 5.10 Step 1: Set up a Search - Ad Hoc Query

Although the ability to query much of the data has been provided in the menu items, there is an opportunity to design your own query of any of the MRIS databases. Database structures and look-up tables have been provided in Appendix D. The use of Dbase commands to set a filter are used in the ad hoc portion of the program.

From the lower portion of the **Select a Category** menu, highlight **Ad Hoc Query** and press Enter (Figure 41). From the screen, you can select the database(s) you wish to query.

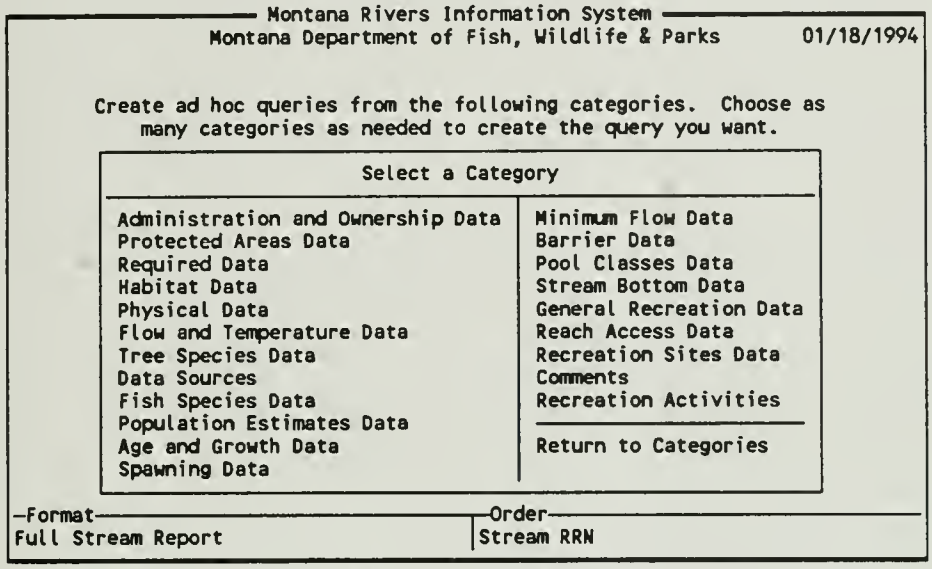



**Figure 41. Databases Accessed Through Ad Hoc Query**

If you were to select Minimum Flow Data, a screen similar to the one shown in Figure 42 will appear. Type in the query using Dbase commands and press Ctrl-Enter when you are done. You can then select another database from the ad hoc menu or combine this selection with one of the queries in the menu system. **If you are combining an ad hoc with a query from the menu system, make the selections from the menu system first.** *Remember that AND statements will be created between databases and other queries.*

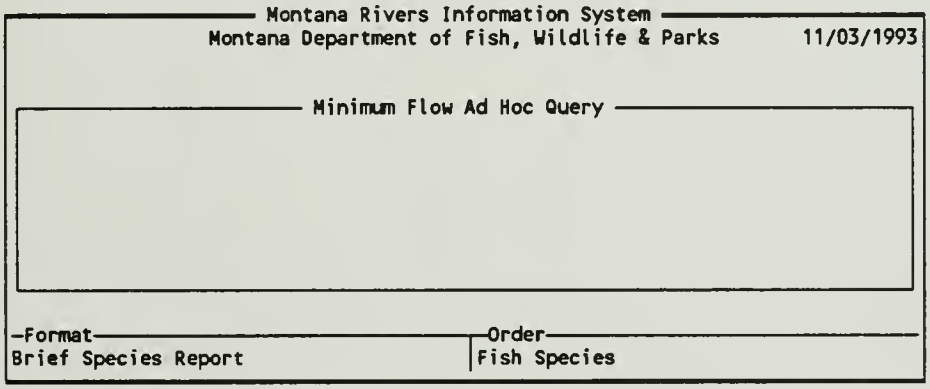



**Figure 42. Ad Hoc Database Selection Menu**

For example, if you wanted to find all the streams in the Missouri River drainage (Hydrologic Units 10020001-10050001) that had an instream flow reservation on it, you would first select the hydrologic units from the **Location** menu under **Select a Category**. From the Ad Hoc Query option, you would then select the **Minimum Flow Data** and press Enter. In the screen shown in Figure 42, type in **H2ORESERV='R'**(the field in MINFLOW.DBF that identifies the type of reservation on a stream reach (Appendix D)) and press Enter. To verify the search you have created, return to the Main Menu and use the **Verify the Search Criteria and Report Format** option. You are then ready to choose the report format and produce the report.

The Ad Hoc Query option will become more user friendly with the next version of the Reporting Program.

# 6 RECREATION SEARCH OPTIONS

## 6.1 Step 1: Set up a Search - Stream Name

Setting up a query by stream name, as in Section 2.1, can be executed using the MRIS reporting program with the purpose of reporting data only from the recreation database. From the **Main Menu** (Figure 1) Select **Step 1: Set up the Search.** Be sure to clear all previous search selections before proceeding. From the Select a Category menu (Figure 2), select **Stream Name**. Recall from Section 2.1 that you have 3 ways to choose a stream. For this example, do the following: the highlight bar will be on **Select Stream by Name**, press Enter. *(If you don't have the entire master stream database, choose a stream or river from your region).* To find the Swan River, activate the search utility by pressing Alt-S and type in **Swan R.** Press Enter to turn off the search utility and then select several reaches of the Swan River by pressing Enter. Press Ctrl-Enter and return to the Main Menu.

From the Main Menu, select **Step 2: Select a Report Format.** For the example, we will use the **Recreation Data Report**; move to that option and press Enter. By choosing **Recreation Data Report**, the fisheries data is excluded from the report (Figure 43). Like the full stream report, another menu will follow with the opportunity to select some or all of the recreation report sections. You can press either Ctrl-Enter or the Escape key (Esc) and all of the recreation report sections will automatically be selected, or you can deselect report sections by pressing Enter for each report section you wish to exclude.

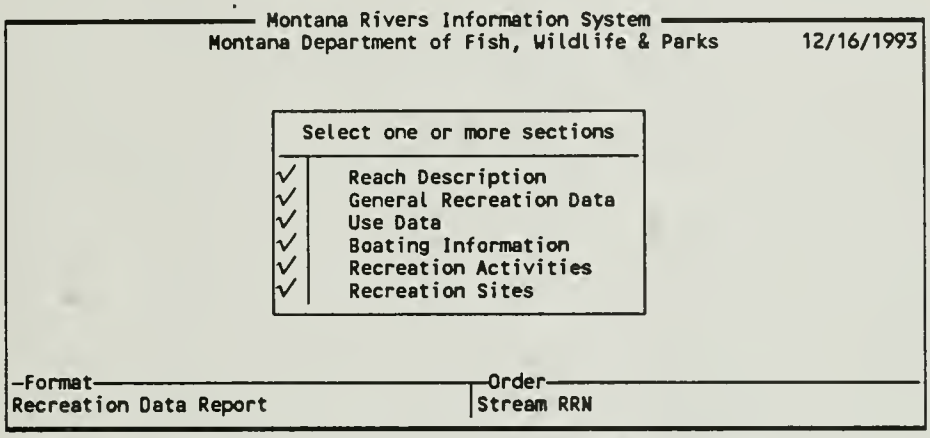



**Figure 43. Recreation Data Report Sections**

Return to the Main Menu and select **Verify Search Criteria** to check your designed query and report. From the Main Menu, select **Step 3: Produce the Report**. Select **Display on Screen**. Figure 44 shows the first page of the full recreation report for a reach of the Swan River.

```
                    Montana Department of Fish, Wildlife & Parks      01/18/1994
                         Montana Rivers Information System
                                 Recreation Report

SWAN R                                17010211 00100.00 1   PK0010000
 MOUTH - BIGFORK DAM
 Map Name: KALISPELL
                    ----------General Recreation Information----------

 Tourism Region: Glacier                        Value Class: 2  # Evaluators:  0
 Ingress Rating:
 Access Rating: Abundant                        Scenic Quality: High
 Water Body:
 ROS Class: Roaded natural                Rural
 Source Name: DD                                Source Agency: DFWP, BLM, and
                                                               USFS
 Data Sources: 12,61,2,S. Rumsey,150
 Update Date: 11/15/1993
 Miscellaneous Comments: Angler days is for all of Swan River.


-Total--Scanned--Matched--Page-------------------------------------------------
  8844|       1|       0|    1|See the next screen (y/n)?      (Press V to view)
```

**Figure 44. Full Recreation Report (First page)**

As in the fisheries queries, you can use any of the various search options (entering a stream name, selecting a stream from a list, selecting by location, etc.) in Step 1. In Step 2, selecting only **Recreation Data Report** will insure that you only receive the recreation data. **The recreation report sections are also part of the Full Stream Report.**

## 6.2 Step 1: Set up a Search - Recreation Features - Boatable Season

Clear all selections criteria before proceeding. From the Main Menu select **Step 1: Set up the Search.** From the Select a Category menu move the highlight bar to **Recreation Features** and press Enter. The following menu will appear (Figure 45).

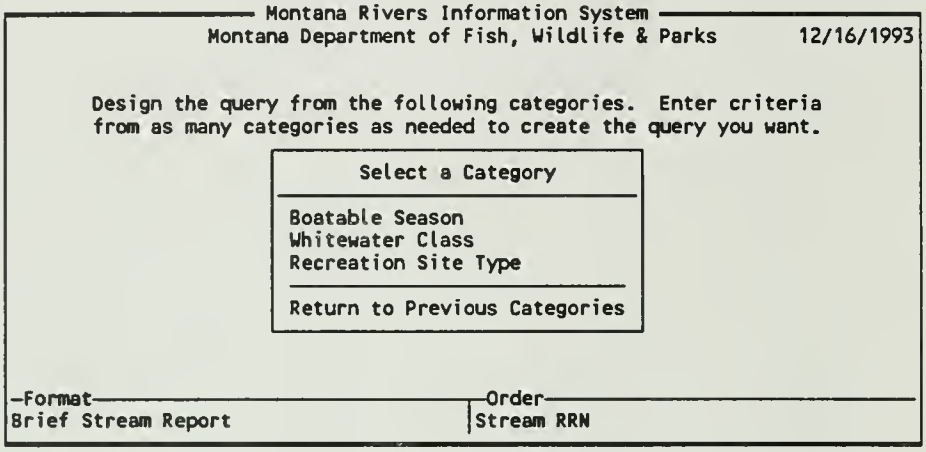

Montana Rivers Information System
Montana Department of Fish, Wildlife & Parks 12/16/1993
Design the query from the following categories. Enter criteria
from as many categories as needed to create the query you want.
Select a Category
Boatable Season
Whitewater Class
Recreation Site Type
Return to Previous Categories
Format
Brief Stream Report
Order
Stream RRN

**Figure 45. Recreation Features Menu**

With the highlight bar on **Boatable season**, press Enter. The following menu will appear, which illustrates boatable season choices (Figure 46). You can make as many selections from this menu as you wish by pressing Enter. After selections have been made, press Ctrl-Enter to be returned to the previous menu; return to the Main Menu.

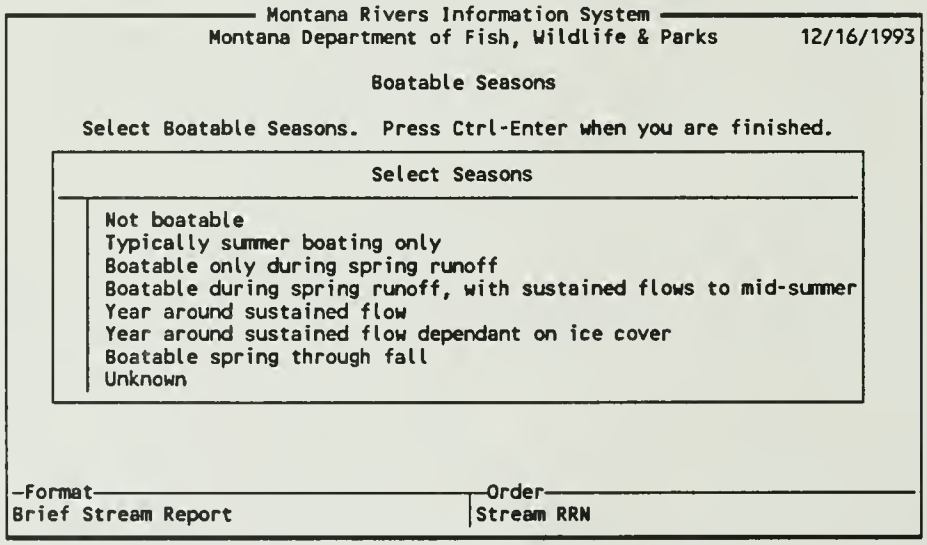

Montana Rivers Information System
Montana Department of Fish, Wildlife & Parks 12/16/1993
Boatable Seasons
Select Boatable Seasons. Press Ctrl-Enter when you are finished.
Select Seasons
Not boatable
Typically summer boating only
Boatable only during spring runoff
Boatable during spring runoff, with sustained flows to mid-summer
Year around sustained flow
Year around sustained flow dependant on ice cover
Boatable spring through fall
Unknown
Format
Brief Stream Report
Order
Stream RRN

**Figure 46. Boatable Season Menu**

### 6.3 Step 1: Set up a Search - Recreation Features - Whitewater Class

From the Main Menu select **Step 1: Set up the search.** From the Select a Category menu, select **Recreation Features.** Move the highlight bar to **Whitewater Class** and press Enter (Figure 47). You can select as many whitewater classes as you want by pressing Enter; when finished selecting, press Ctrl-Enter and return to the Main Menu.

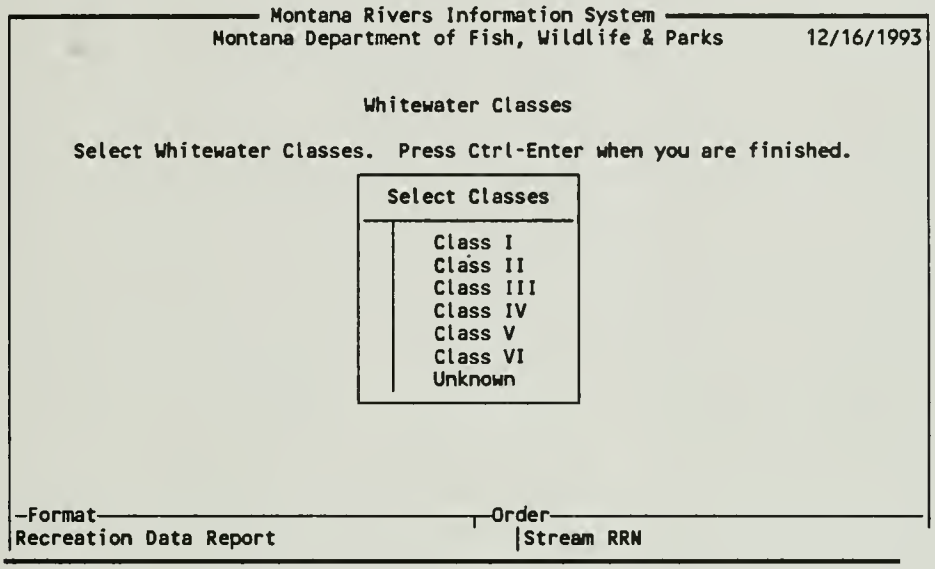



**Figure 47. Whitewater Class Menu**

### 6.4 Step 1: Set up a Search - Recreation Features - Recreation Site Type

From the Main Menu select **Step 1: Set up the Search.** From the Select a Category Menu select **Recreation Features.** Move the highlight bar to **Recreation Site Type** and press Enter (Figure 48). Once again, you can select as many of these site types as you wish.

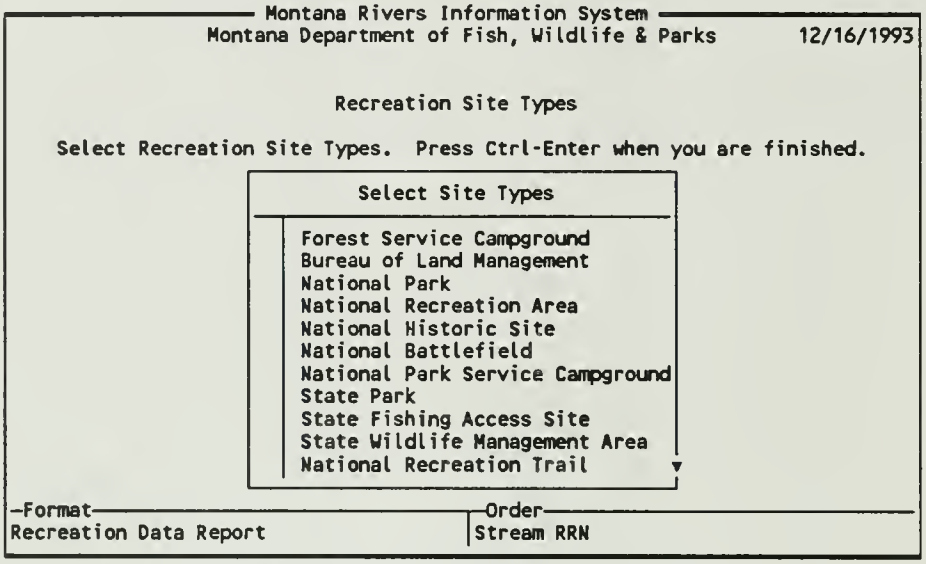



**Figure 48. Recreation Site Type Menu**

### 6.5 Step 1: Set up a Search - A more complex query - combining menu options with the Ad hoc query

Let's suppose a member of the public calls and wants a particular floating experience. They want to know where all the stream reaches in your region are with exceptional or high scenic quality, that are boatable during spring and summer and have Class 2 or 3 rapids. You can combine the Ad Hoc Query option with queries from the menus to satisfy this request. **When you are combining an ad hoc query with a query from the menu system, make the selections from the menu system first.**

From the Main Menu, select **Step 1: Set up the Search**. From the Select a Category menu, move the highlight bar to **Location** and press Enter. A menu like Figure 16 will appear. Move the highlight bar to **FWP Region** and press Enter, you will then see a menu like Figure 29. The highlight bar is on **Region 1**. Select your region and Ctrl-Enter to exit the screen. Return to the Select a Category menu. From this menu, select **Recreation Features**. Select **Boatable season;** from the Boatable season menu, select **boatable during spring runoff with sustained flows to mid-summer** by pressing Enter and then Ctrl-Enter to exit the screen. Return to the Select a Category menu.

Select **Recreation Features** again. Select **Whitewater Class**. Select **Class II** and **Class III** from the Whitewater Class menu by moving to the selection and pressing Enter; Ctrl-Enter allows you to exit the menu. Return to the Select a Category menu. Select **Ad hoc query**. From the menu, move the highlight bar to **General Recreation Data**, and press Enter. In the box, type in: **Scenic_qua = 1.or.Scenic_qua = 2** and press Enter. Return

to Main Menu.

From the Main Menu, select **Step 2: Select a Report Format**. Move the highlight bar to **Recreation Data Report** and press Enter. When the next menu appears, press Esc or Ctrl-Enter to automatically select all the recreation data sections. Return to the Main Menu and verify search criteria. From the Main Menu, select **Step 3: Produce the report.** Select **Display on screen.** Change the page headings to *Streams in (your region number) with high or exceptional scenery, spring & summer boatability, Class 2 or 3 rapids* the report will begin to run.

This is quite a complicated query and will take a few minutes to run. View a few records before canceling the report. *(For Regions 6 and 7, it is likely that no stream reaches meeting this query will be found.)*

# APPENDICES

# APPENDIX A

## MRIS Reporting Program Installation

The purpose of the MRIS Reporting Program installation program is to install the MRIS Reporting Program software and data files on your computer, to create the directory for the programs and data files, and to provide the option to modify the CONFIG.SYS and AUTOEXEC.BAT files.

Before installing the MRIS Reporting Program, the computer must be configured to have at least 480 Kbytes of available conventional memory and 2 MBytes of expanded memory (EMS). Expanded memory is extended memory (XMS) that has been converted by a memory manager. Typical memory managers are EMM386.EXE which comes with some versions of MS-DOS and QEMM386.EXE from QuarterDeck. If you are not familiar with memory management contact your system administrator.

Depending on the number of hydrologic units you have been sent (region, subset of region, statewide), there will be either one or two diskettes. The installation program and its related files are either contained on the diskette labeled **INSTALL** in the event you have been sent two diskettes. The MRIS Reporting Program programs and data files are stored on the other diskette(s).

### Copying the files

The simplest method for installing MRIS Reporting Program is to create a temporary directory, e.g. TEMP, on your hard disk and copy all of the diskettes to that directory. This directory will serve as the source directory for the installation program. If you do not have sufficient hard disk space for both the **INSTALL** and data files, you can just copy the **INSTALL** files to the hard disk. Then, during the installation, you can select the floppy drive to load the files from the additional diskette(s).

After copying the files on the diskettes, change to the directory you've created, TEMP, and type **INSTALL**. **INSTALL** begins by checking the hard disk for the location of several files including AUTOEXEC.BAT and CONFIG.SYS. After locating the files, **INSTALL** will present you with a series of questions and information prior to creating the MRIS Reporting Program programs and data files on your computer.

### Entering the source and target directories

**INSTALL** will ask you to identify the source directory, e.g. the TEMP directory. When you start **INSTALL** in the TEMP directory, it automatically selects the TEMP as the source directory. If this is not acceptable, you can specify the correct source directory. Next **INSTALL** determines

the amount of free space on each of your hard disk drives. If one or more of the drives has sufficient space to create the MRIS Reporting Program programs and data, you will be prompted to supply a target directory name. If the target directory does not already exist **INSTALL** will ask you if you want to create it. During the installation, **INSTALL** will place the MRIS Reporting Program programs and data in the target directory **(labeled MRIS unless you have choose to change it)** with the exception of the data index files that will be created the first time you run the MRIS Reporting Program software. If **INSTALL** determines there is insufficient space on your hard disk for the software, the installation is stopped and the amount of disk space needed is displayed.

**Altering CONFIG.SYS**

To run properly, the MRIS Reporting Program software requires that the FILES statement in CONFIG.SYS be set to a minimum of 147. You have the option of changing the FILES statement automatically during the installation process. You will be asked if you want to change the FILES statement. If you respond yes, **INSTALL** will create a backup of the current CONFIG.SYS named CONFIG.MSL and will modify the current CONFIG.SYS. If the FILES statement is already set at or above 147, the CONFIG.SYS will not be altered.

If no CONFIG.SYS file exists at all, **INSTALL** asks you if you want to create one. If you respond **yes**, **INSTALL** creates CONFIG.SYS in the root directory of the C drive with the statements needed to run MRIS Reporting Program.

If you respond **no** to either of the scenarios above **INSTALL** creates a sample file named CONFIG.SMP in the target directory. You can use this sample to see how your CONFIG.SYS file needs to be altered to run the MRIS Reporting Program.

**Altering AUTOEXEC.BAT**

The MRIS Reporting Program report utility also requires that a SET CLIPPER statement with 255 or more files be included in AUTOEXEC.BAT. **INSTALL** also checks for the presence of a file named BASE501B.PLL on the hard disk. If BASE501B.PLL is already present, a second copy need not be created but a SET PLL statement may have to be added to the AUTOEXEC.BAT. If AUTOEXEC.BAT already exists with the needed statements no action is taken by **INSTALL**.

If AUTOEXEC.BAT exists but one or more above required statements are absent or need to be changed, **INSTALL** asks you if you want to modify AUTOEXEC.BAT. If you respond **yes**, **INSTALL** will create a backup of the current AUTOEXEC.BAT named AUTOEXEC.MSL and modify the current AUTOEXEC.BAT as needed.

If no AUTOEXEC.BAT file exists **INSTALL** asks you if you want to create one. If you respond **yes**, **INSTALL** creates the AUTOEXEC.BAT in the root directory of the C drive with the

statements needed to run MRIS Reporting Program.

You should check your AUTOEXEC.BAT file to see if any lines added by INSTALL are in an executable location. For example, if the last line in the original AUTOEXEC.BAT file loads Windows or a menu manager then it is possible the SET PLL or SET CLIPPER lines will not be executed.

If you respond **no** to either of the scenarios above **INSTALL** creates a sample file, AUTOEXEC.SMP, in the target directory with the statements needed to run the MRIS Reporting Program.

You can use this sample to see how your AUTOEXEC.BAT file needs to be altered to run the MRIS Reporting Program. **If you select to change the AUTOEXEC.BAT and CONFIG.SYS files, you must reboot you computer before you run the MRIS Reporting Program.**

**Adding or moving EDENV.EXE**

EDENV.EXE is a utility program whose primary use is to change the colors used by MRIS Reporting Program to display menus, prompts and other screen display functions.

If EDENV.EXE already exists on your hard disk (because you have other Montana State Library or the MDFWP Edit/Entry Program), **INSTALL** checks to see if it resides in a directory in the path. If it does not **INSTALL** asks if you want to move EDENV.EXE to a directory in the path. If you respond **yes**, **INSTALL** lets you select the directory and copies EDENV.EXE to that directory and deletes the original.

If EDENV.EXE does not exist on your hard disk, **INSTALL** asks if you want to add it to the target directory. If you respond **yes**, **INSTALL** creates EDENV.EXE in the target directory.

## APPENDIX B

### Runtime Errors

Some errors can occur when you run the MRIS Reporting Program Report Utility. Most of the time these errors are minor and can be easily corrected. Common errors and possible solutions are discussed below.

### I. Out of Memory

The MRIS Reporting Program Report Utility can be a memory hog. 512K of memory is a desirable amount of memory to be available before running the program. If you get an out of memory error the only option is to provide more memory. Try unloading some or all of your TSR programs, (programs that are loaded and stay resident in memory, for example SIDEKICK or IS) or modifying your AUTOEXEC.BAT file so they are not loaded automatically.

Note: There is public domain software called "CONFIG.EXE" which can be used to create more than one operating environment which can be easily loaded.

Note: The presence of TSR programs may also be the reason for slow performance. Again try unloading some or all of your TSR programs.

### II. File Opening Errors

The MRIS Reporting Program Report Utility requires over 140 files to be open at one time. Typical CONFIG.SYS configurations do no provide for this many files to be open at one time. The INSTALL utility will either change your CONFIG.SYS and AUTOEXEC.BAT files to meet the files requirement or write sample CONFIG.SYS and AUTOEXEC.BAT files in the MRIS Reporting Program directory. If an error message appears indicating that a file was not opened there are several possible solutions.

1) The FILES statement in your CONFIG.SYS is set too low or does not exist. We recommend that the FILES statement be set at FILES=147 or greater. An odd number is recommended.

2) Another program such as a TSR or Windows application and the MRIS Reporting Program are using several files at the same time. You can increase the FILES statement in the CONFIG.SYS file.

3) The statement SET CLIPPER=F:255 is not in the environment. This software was written in Clipper, a compiler for the dBase language. In order to run the MRIS Reporting Program Report Utility with more than 140 files open the SET statement must either be

included in the AUTOEXEC.BAT file, be included in a batch file that is used to run the report or be entered at the DOS prompt before running the report.

**III. Any Other Error**

Any other error will probably require technical assistance. Press the Print Screen key to print the screen on the printer or note all the information on the screen and call or write:

Janet Decker-Hess
Montana Department of Fish, Wildlife, and Parks
MRIS Program Manager
490 N. Meridian
Kalispell, MT 59901
406-752-5501, ext 228

## APPENDIX C

### MRIS Reporting Program Files

The following files are on the INSTALL diskette (if you have received only one diskette, all of the files in the following two sections will be on that diskette):

| | |
|---|---|
| INSTALL.EXE | The installation program. |
| INSTALL.ITX | Indexed text for the installation program. |
| SIZES | List of space needed to install the MRIS Reporting Program Report Utility. |
| FILES.LST | List of installed files, used to verify installation. |
| AUTOEXEC.SMP | Sample AUTOEXEC.BAT file. |
| CONFIG.SMP | Sample CONFIG.SYS file. |
| README | Additional information needed for installation or the report utility. |

If there is an additional diskette, it will labelled MRIS DATA/PROG and contain the compressed files listed below:

| | |
|---|---|
| PROG.EXE | The MRIS Reporting Program Utility and related files. |
| PLL.EXE | BASE501A.PLL, expanded if needed. |
| LOOKUP.EXE | Lookup databases. |
| DATA.EXE | Fisheries and stream reach description databases |
| RECDATA.EXE | Recreation databases |
| ENV.EXE | EDENV.EXE, a utility to modify screen colors. |
| RDA.EXE | Report Dictionary compiler and related files. Can be used to modify the report queries and formats. Not expanded by the installation utility, but available if needed. |

# APPENDIX D

## Data Structures and other support documents

### Fisheries Information Database Structures

**ADMNOWN.DBF** - Administrative and Ownership Database Structure

| Field Name | Type | Width | Dec | Description |
|---|---|---|---|---|
| SHORT_RRN | C | 9 | 0 | Short RRN |
| SECTION | C | 1 | 0 | Section No. |
| FWPREGION | C | 1 | 0 | FWP Region |
| FWPDISTRIC | C | 1 | 0 | FWP District |
| WATERCODE | C | 6 | 0 | DFWP Watercode |
| STRMREACH | C | 3 | 0 | DFWP Watercode reach number |
| WTRTYPE | C | 2 | 0 | (01= Trout stream; 02 = non-trout stream; 10 = stream management undesignated; 19 = unable to sustain fish; 41 = stream with mostly warm/cool water fish) |
| STRMORDER | C | 2 | 0 | Stream order code. Using Quad scale map (1 = smallest unbranched perennial tributaries; 2 = below the junction of two first order streams; 3 = below the junction of two second order streams; etc.) |
| MTNRNG1 | C | 3 | 0 | Mountain range code 1. |
| MTNRNG2 | C | 3 | 0 | Mountain range code 2. |
| FISHREGS | L | 1 | 0 | Fishing regulation exception. |
| SERIAL | C | 3 | 0 | FWP Fisheries Serial No. |

**AGEGROW.DBF** - Age and Growth Information Database Structure

| Field Name | Type | Width | Dec | Description |
|---|---|---|---|---|
| SHORT_RRN | C | 9 | 0 | Short RRN |
| SECTION | C | 1 | 0 | Section No. |
| SURV_DATE | D | 8 | 0 | Survey date |
| SPECIES | C | 3 | 0 | Fish species code |
| AGE | C | 1 | 0 | Age (0 - 5) |
| COUNT | N | 3 | 0 | No. of fish in group |
| MEAN_LEN | N | 5 | 2 | Mean length |
| MEAN_WT | N | 5 | 2 | Mean weight |
| AGE_RAT | C | 1 | 0 | Age and growth data quality rating. (1 =low to 9 high) |
| SERIAL | C | 3 | 0 | FWP Fisheries Serial No. |

**BARRIER.DBF** - Barrier Database Structure

| Field Name | Type | Width | Dec | Description |
|---|---|---|---|---|
| SHORT_RRN | C | 9 | 0 | Short RRN |
| SECTION | C | 1 | 0 | Section |
| BARR_SIGN | C | 1 | 0 | Barrier significance to species (P=prevents introgression to species of special concern, S=spawning blocked upstream) |
| BARR_TYPE | C | 1 | 0 | Type of barrier (W=waterfall, C=culvert, D-debris, B=bedrock, I=insufficient flow, M=Manmade dam) |
| BARR_LAT | N | 7 | 1 | Barrier latitude |
| BARR_LONG | N | 8 | 4 | Barrier longitude |
| BARR_HEIGT | N | 5 | 1 | Barrier height in feet |
| BARR_MGMT | C | 1 | 0 | Management recommendations for barrier (R=remove, M=maintain, E=remove excess debris) |
| COMMENT | C | 254 | 0 | Barrier comment |
| SERIAL | C | 3 | 0 | Serial Number |

**BARRSPEC.DBF** - Fish species related to barrier database

| Field Name | Type | Width | Dec | Description |
|---|---|---|---|---|
| SHORT_RRN | C | 9 | 0 | Short RRN |
| SECTION | C | 1 | 0 | Section No. |
| SPECIES | C | 3 | 0 | Fish species code (See Appendix B-16) |

**BIOECON.DBF** - Bioeconomic Database Structure

| Field Name | Type | Width | Dec | Description |
|---|---|---|---|---|
| SHORT_RRN | C | 9 | 0 | Short RRN |
| SECTION | C | 1 | 0 | Section No. |
| CVM | N | 7 | 2 | Contingent value estimate in dollars/day |
| TCM | N | 7 | 2 | Travel cost estimate in dollars/day |
| YEAR | C | 4 | 0 | Survey year |
| SOURCE | C | 100 | 0 | Source of the data |
| BIOEC_RATE | C | 1 | 0 | Data quality rating for bioeconomic data. (1 =low to 9 = high) |
| SERIAL | C | 3 | 0 | FWP Fisheries Serial No. |

**COMMENTS.DBF** - Comments Database Structure

| Field Name | Type | Width | Dec | Description |
|---|---|---|---|---|
| SHORT_RRN | C | 9 | 0 | Short RRN |
| SECTION | C | 1 | 0 | Section No. |
| CATEGORY | C | 2 | 0 | Category of comments. GN = General; LF= Limiting Factor; FR = Fishing regulation; SR= Sport Fishing pressure; SC = Species of Special Concern; GM= Gamefish; MR=Management Recommendations; |
| COMMENT | M | 10 | 0 | Comments |
| SERIAL | C | 3 | 0 | FWP Fisheries Serial No. |

**DTASOURC.DBF** - Data Sources Database Structure

| Field Name | Type | Width | Dec | Description |
|---|---|---|---|---|
| SHORT_RRN | C | 9 | 0 | Short RRN |
| SECTION | C | 1 | 0 | Section No. |
| SURVEYDATE | D | 8 | 0 | Survey date. |
| DATASOURCE | C | 60 | 0 | Name of data source. |
| AGENCY | C | 3 | 0 | Agency Code (see agencylu.dbf) |
| SERIAL | C | 3 | 0 | Serial no. |

**FISHPLNT.DBF** - Fish Planting Database Structure

| Field Name | Type | Width | Dec | Description |
|---|---|---|---|---|
| SHORT_RRN | C | 9 | 0 | Short RRN |
| SECTION | C | 1 | 0 | Section No. |
| FISHPLANT | C | 1 | 0 | Fish planted regularly (N = No; Y = Yes; blank = unknown or unrated) |
| WHY_PLANT | C | 1 | 0 | Why fish planted. (H = historic plant; R = restoration plant; M = Mitigation; P= Put and Take; S= Supplementation of Existing Fishery; O= Other) |
| SPECIES | C | 3 | 0 | Fish species code. See Appendix B-16 |
| NO_PLANT | N | 5 | 0 | Number of fish planted |
| SIZE | N | 5 | 1 | Size of fish planted ( in inches) |
| FREQUENCY | C | 1 | 0 | Planting frequency code. (A = Annually; B= Biannually; S = Semi-annually; O= Other; blank = unknown) |
| ARTFFISHRY | C | 1 | 0 | Is the sport fishery of the reach based on planting? (Y/N) |
| SUITRESID | C | 1 | 0 | Habitat suitability rating for residence.(1 = best to 5 = poorest; blank = unknown or unrated) |
| SUITSPAWN | C | 1 | 0 | Habitat suitability rating for spawing. (1 = best to 5 = poorest; blank = unknown or unrated) |
| SUITREAR | C | 1 | 0 | Habitat suitability rating for rearing. (1 = best to 5 = poorest; blank = unknown or unrated) |
| SUITSPEC | C | 3 | 0 | Fish species code for suitable habitat. |

**FISHSPEC.DBF** - Fish Species Database Structure

| Field Name | Type | Width | Dec | Description |
|---|---|---|---|---|
| SHORT_RRN | C | 9 | 0 | Short RRN |
| SECTION | C | 1 | 0 | Section No. |
| SPECIES | C | 3 | 0 | Fish species code. Field in a query. |
| FISHABUN | C | 1 | 0 | Fish abundance code. Field in a query. |
| FISHUSE | C | 1 | 0 | Fish use code. Field in a query. |
| RATFISH | C | 1 | 0 | Fish species data quality rating. (1 = low to 9 = high) |
| FISHSCGC | C | 1 | 0 | Species of special concern genetic code. Field in a query. |
| FISHSCHC | C | 1 | 0 | Species of special concern habitat code. (A=Best,... D=Limited) |
| HISTCODE | C | 1 | 0 | Historical fish population code. (A=Aboriginal, B=Reintroduced, E=Eliminated, P=Historically Planted, L=Species Composition Altered, H=Hybridized) |
| SURV_DATE | C | 8 | 0 | Date of survey for species of special concern. |
| SERIAL | C | 3 | 0 | FWP Fisheries Serial No. |

**FLOWTEMP.DBF** - Flow and Temperature Database Structure

| Field Name | Type | Width | Dec | Description |
|---|---|---|---|---|
| SHORT_RRN | C | 9 | 0 | Short RRN |
| SECTION | C | 1 | 0 | Section No. |
| SURV_DATE | D | 8 | 0 | Survey date. |
| FLOW_METH | C | 1 | 0 | Flow data collection method. |
| FLOWDS | C | 7 | 0 | Flow during survey in cubic feet/second. |
| RATFLOWDS | C | 1 | 0 | Flow survey data quality rating. (1 = low to 9 = high) |
| FLOWSTAGE | C | 1 | 0 | Stage during survey flow. (1 = dry; 2 = low; 3= moderate; 4 = high; 5 = flooding; blank = unknown or not determined) |
| NORLOWFLOW | C | 7 | 0 | Normal low flow (including man caused) in cfs. |
| RATNLFLOW | C | 1 | 0 | Normal low flow data quality rating. (1 = low to 9=high) |
| MORE_FLOW | L | 1 | 0 | More flow data available? T/F? |
| BEAVERPOND | C | 3 | 0 | Percent of reach inundated by beaver ponds. |
| RATBEAVRPD | C | 1 | 0 | Percent inundated by beaver ponds data quality rating.(1 = low to 9 = high) |
| PKH2OTEMP | C | 2 | 0 | Normal peak water temperature. |
| RATPKH2OTP | C | 1 | 0 | Normal peak water temperature data quality rating.(1 = low to 9 = high) |
| TEMPDS | N | 4 | 1 | Temperature during survey. |
| MORE_TEMP | L | 1 | 0 | More temperature data available? T/F |
| SERIAL | C | 3 | 0 | FWP Fisheries Serial No. |

**HABITAT.DBF** - Habitat Database Structures

| Field Name | Type | Width | Dec | Description |
|---|---|---|---|---|
| SHORT_RRN | C | 9 | 0 | Short RRN |
| SECTION | C | 1 | 0 | Section No. |
| FILAMALGAE | C | 1 | 0 | Filamenteous algae. (C=common; N=none observed; R=rare; X=present, abundance not specified) |
| HIGHRPLANT | C | 1 | 0 | Higher plants code. (C=common; N=none observed; R=rare; X=present, abundance unknown. |
| GRAZLENGTH | C | 5 | 0 | Length grazed by livestock in feet. |
| GRAZCOMPAT | C | 1 | 0 | Livestock grazing length compatability code. (1=low; 2=poor; 3=stable but spotty; 4=stable or improving; 5=high; blank=unknown or unrated) |
| STRMCOVER | C | 1 | 0 | Stream cover habitat rating.(1=poor; 2=fair; 3=good; 4=excellent; blank=unknown or unrated) |
| BNKCONDITN | C | 1 | 0 | Bank condition habitat rating. (1=poor; 2=fair; 3=good; 4=excellent; blank=unknown or unrated) |
| BNKSTABILT | C | 1 | 0 | Bank stability habitat rating. (1=poor; 2=fair; 3=good; 4=excellent; blank=unknown or unrated) |
| CHANSTABIL | C | 1 | 0 | Channel stability habitat rating. (1=poor; 2=fair; 3=good; 4=excellent; blank=unknown or unrated) |
| STRMBSEDMT | C | 1 | 0 | Streambed sediment habitat rating. (1=poor; 2=fair; 3=good; 4=excellent; blank=unknown or unrated) |
| COMBRATING | C | 1 | 0 | Combined habitat rating. (1=poor; 2=fair; 3=good; 4=excellent; blank=unknown or unrated) |
| BNKVEGETAT | C | 1 | 0 | Dominant bank vegetation. (1=Deciduous trees; 2=Conifer; 3=Mixed; 4=Deciduous shrubs; 5=upland shrubs; 6=grass/herbaceous forms; 7=no vegetation, soil, road material; 8=shrubs/trees with soil/rock material (alpine). |
| RIPVEGETAT | C | 1 | 0 | Dominant riparian vegetation. (see bank vegetation codes.) |
| SSURFACCOV | C | 1 | 0 | Subsurface cover rating. (0=none; 1=poor; 2=fair; 3=good; blank=unknown or unrated) |
| HABTREND | C | 1 | 0 | Habitat trend code. (D=deteriorating; I=improving; S=static; blank=unknown or unrated) |
| RISK_INDEX | N | 6 | 2 | Risk assessment index. |
| HAB_RATE | C | 1 | 0 | Habitat data quality rating. (1=low to 9=high) |
| WDIN0_6 | N | 4 | 0 | Feet of instream woody Debris 0-6 inches |
| WDIN6_12 | N | 4 | 0 | Feet of instream woody Debris 6-12 inches |
| WDIN12_18 | N | 4 | 0 | Feet of instream woody debris 12-18 inches |
| WDIN18_99 | N | 4 | 0 | Feet of instream woody debris 18+ inches |
| WDOUT0_6 | N | 4 | 0 | Feet of out-of-stream woody debris 0-6 inches |
| WDOUT6_12 | N | 4 | 0 | Feet of out-of-stream woody debris 6-12 inches |
| WDOUT12_18 | N | 4 | 0 | Feet of out-of-stream woody debris 12-18 inches |
| WDOUT18_99 | N | 4 | 0 | Feet of out-of-stream woody debris 18+ inches |
| SERIAL | C | 3 | 0 | FWP Fisheries Serial No. |

**MINFLOW.DBF** - Minimum Flow Database Structure

| Field Name | Type | Width | Dec | Description |
|---|---|---|---|---|
| SHORT_RRN | C | 9 | 0 | Short RRN |
| SECTION | C | 1 | 0 | Section No. |
| FLOW | C | 6 | 0 | Amount of minimum flow needed. |
| BEGDAY | C | 2 | 0 | Day of begin of minimum flow needed. |
| BEGMONTH | C | 2 | 0 | Month of begin of minimum flow needed. |
| ENDDAY | C | 2 | 0 | Day of end of minimum flow needed. |
| ENDMONTH | C | 2 | 0 | Month of end of minimum flow needed. |
| H2ORESERV | C | 1 | 0 | Has water been (R= reserved? M= minimum flows determined? N = No) |
| RESERVADQ | L | 1 | 0 | Is the amount of water reserved adequate? (Y = Yes, N = No) |
| SERIAL | C | 3 | 0 | FWP Fisheries Serial No. |

**PHYSICAL.DBF** - Physical Stream Characteristics Database Structure

| Field Name | Type | Width | Dec | Description |
|---|---|---|---|---|
| SHORT_RRN | C | 9 | 0 | Short RRN |
| SECTION | C | 1 | 0 | Section No. |
| AVCHANWIDT | C | 4 | 0 | Average channel width in feet. |
| RATAVCHANW | C | 1 | 0 | Average channel width data quality rating.(1 = low to 9 = high) |
| AVGVWIDTH | C | 5 | 0 | Average valley width in feet. |
| RATAVGVWID | C | 1 | 0 | Average valley width data quality rating. (1 = low to 9 = high) |
| AVGRIPWID | C | 4 | 0 | Average riparian width in feet. |
| RATAVGRIPW | C | 1 | 0 | Average riparian width data quality rating. (1= low to 9 = high) |
| AVCHANDEPT | C | 4 | 0 | Average channel depth in feet. |
| RATAVCHAND | C | 1 | 0 | Average channel depth data quality rating. (1 = low to 9 = high) |
| UPRBELEV | C | 7 | 0 | Upper boundary elevation in feet. |
| RATUPRBELE | C | 1 | 0 | Upper boundary elevation data quality rating. (1 = low to 9 =High) |
| LWRBELEV | C | 7 | 0 | Lower boundary elevation in feet. |
| RATLWRBELE | C | 1 | 0 | Lower boundary elevation data quality rating. (1 = low to 9 = high) |
| UPRBAVWETW | C | 6 | 0 | Upper boundary average wetted width |
| RATUPRBAVW | C | 1 | 0 | Upper boundary average wetted width data quality rating. (1 = low to 9 = high) |
| LWRBAVWETW | C | 6 | 0 | Lower boundary average wetted width in feet. |
| RATLWRBAVW | C | 1 | 0 | Lower boundary average wetted width data quality rating.(1 = low to 9 = high) |
| GRADIENT | C | 4 | 0 | Percent gradient. |
| RATGRADNT | C | 1 | 0 | Percent gradient data quality rating. (1 = low to 9 = high) |
| SINUOSITY | C | 4 | 0 | Sinuosity. |
| RATSINUOS | C | 1 | 0 | Sinuosity data quality rating. (1 = low to 9 =high) |
| SIDECHOCC | C | 1 | 0 | Side channel occurance code. (H = high; L =low; M = moderate; N = nil; blank = unknown or not determined) |
| RATIOPOOL | C | 3 | 0 | Percentage of reach that is pools. |
| RATIORUN | C | 3 | 0 | Percentage of reach that is runs. |
| RATIORIFFL | C | 3 | 0 | Percentage of reach that is riffles. |
| RATIOPOCKT | C | 3 | 0 | Percentage of reach that is pocket water. |
| RATRATIO | C | 1 | 0 | Percentage of reach data quality rating. (1 = low to 9 =high) |
| ROSGEN_CL | C | 2 | 0 | Visual classification of the channel type and subtype using Rosgen's (1985) channel type classification. Alpha and numeric combination using gradient, sinuosity, width/depth ratio, dominant particle size, channel entrenchment, and landform feature. |
| SERIAL | C | 3 | 0 | FWP Serial Number |

**POOL.DBF** - Pool Physical Characteristics Database Structure

| Field Name | Type | Width | Dec | Description |
|---|---|---|---|---|
| SHORT_RRN | C | 9 | 0 | Short RRN |
| SECTION | C | 1 | 0 | Section No. |
| PCLASS1 | C | 3 | 0 | Pool class 1 percentage. |
| PCLASS2 | C | 3 | 0 | Pool class 2 percentage. |
| PCLASS3 | C | 3 | 0 | Pool class 3 percentage. |
| PCLASS4 | C | 3 | 0 | Pool class 4 percentage. |
| PCLASS5 | C | 3 | 0 | Pool class 5 percentage. |
| RATPCLASS | C | 1 | 0 | Pool class percentages data quality rating.(1 = low to 9 = high) |
| PCLBEDROCK | C | 3 | 0 | Percentage of bedrock in pool class 1, 2 and 3. |
| PCLDEBRIS | C | 3 | 0 | Percentage of debris in pool class 1, 2 and 3. |
| PCLBNKSCR | C | 3 | 0 | Percentage of bank scour in pool class 1, 2 and 3. |
| PCLBTMSCR | C | 3 | 0 | Percentage of bottom scour in pool class 1, 2 and 3. |
| RATPCL123 | C | 1 | 0 | Pool class 1, 2 & 3 percentages data quality rating.(1 = low to 9 = low) |
| AVMAXPOOLD | C | 5 | 0 | Average maximum pool depth at low flow in feet. |
| RATAVMAXPD | C | 1 | 0 | Average maximum pool depth at low flow data quality rating. (1 = low to 9 = high) |
| SERIAL_NO | C | 3 | 0 | FWP Fisheries Serial No. |

**POPESTIM.DBF** - Fish Population Estimates Database Structures

| Field Name | Type | Width | Dec | Description |
|---|---|---|---|---|
| SHORT_RRN | C | 9 | 0 | Short RRN |
| SECTION | C | 1 | 0 | Section No. |
| SURV_DATE | D | 8 | 0 | Survey date |
| SPECIES | C | 3 | 0 | Fish species code. See Appendix B-16. |
| COLL_CODE | C | 6 | | 0 Collection code from MDFWP estimator form |
| SECNAME | C | 30 | 0 | Name of population estimate section |
| SECLENGTH | N | 5 | 2 | Length of survey reach |
| SECUNIT | C | 6 | 0 | Units of SECLENGTH |
| AVE_WIDTH | N | 6 | 2 | Average width of sampling reach. |
| SECDESC | C | 50 | 0 | Latitude/longitude and verbal description of section |
| GEAR | C | 1 | 0 | Gear code. (B = boat shocking with boom; M = boat shocking - mobile anode; P = backpack shocking; S = bank shocking; I = above water observation; U = snorkeling; A = angling; C = chemical; E = explosives; K = creel; R = dewatering; Z = hand capture) |
| ESTIM_MTHD | C | 1 | 0 | Estimation method code. (P = Petersen mark-recapture; S = Schanble mark-recapture; E= one pass; T = two pass; Z = Zippin; M = multi-pass, maximum likelihood; C = catch per unit effort; N = total number; O = other) |
| BIOMASS | C | 6 | 0 | Total biomass in lbs. |
| GRP1_359 | N | 4 | 0 | Group 1; population estimate from 3.0 in. to 5.9 in. |
| GRP1_ERR | N | 3 | 0 | Standard error for Group 1 |
| GRP1_LNG | N | 5 | 2 | Mean length for Group 1 |
| GRP1_WT | N | 5 | 2 | Mean weight for Group 1 |
| GRP2_6119 | N | 4 | 0 | Group 2; population estimate from 6.0 in. to 11.9 in. |
| GRP2_ERR | N | 3 | 0 | Standard error for Group 2 |
| GRP2_LNG | N | 5 | 2 | Mean length for Group 2 |
| GRP2_WT | N | 5 | 2 | Mean weight for Group 2 |
| GRP3_12179 | N | 4 | 0 | Group 3; population estimate from 12.0 in. to 17.9 in. |
| GRP3_ERR | N | 3 | 0 | Standard error for Group 3 |
| GRP3_LNG | N | 5 | 2 | Mean length for Group 3 |
| GRP3_WT | N | 5 | 2 | Mean weight for Group 3 |
| GRP4_18 | N | 4 | 0 | Group 4; population estimate from 18.0 in. and greater |
| GRP4_ERR | N | 3 | 0 | Standard error for Group 4 |
| GRP4_LNG | N | 5 | 2 | Mean length for Group 4 |
| GRP4_WT | N | 5 | 2 | Mean weight for Group 4 |
| TOT_STDERR | N | 3 | 0 | Standard error for total |
| TOTAL_EST | N | 4 | 0 | Total estimated number for survey reach |
| PER_GAME | N | 3 | 0 | Percent composition of game species. |
| MIN_LENGTH | N | 5 | 2 | Minimum length in the estimate |

**POPESTIM.DBF** - Fish Population Estimates Database Structures (cont)

| Field Name | Type | Width | Dec | Description |
|---|---|---|---|---|
| MAX_LENGTH | N | 5 | 2 | Maximum length in the estimate |
| POP_RAT | C | 1 | 0 | Data quality rating of population data (1 = low to 9 = high) |
| SERIAL | C | 3 | 0 | FWP Fisheries Serial No. |

**PRESSURE.DBF** - Fishing Pressure Database Structure

| Field Name | Type | Width | Dec | Description |
|---|---|---|---|---|
| SHORT_RRN | C | 9 | 0 | Short RRN |
| SECTION | C | 1 | 0 | Section No. |
| YEAR | | | | |
| SFPFMD | C | 5 | 0 | Sport fishing pressure estimate in angler-days/year/unit |
| SFPSD | C | 5 | 0 | Sport fishing pressure standard deviation. |
| SFPYR | C | 2 | 0 | Year sport fishing data pressure data collected. |
| RATSFP | C | 1 | 0 | Sport fishing pressure data quality rating. (1 = low to 9 = high) |
| RESIDENT | C | 5 | 0 | Resident fishing pressure estimate |
| RES_STDDEV | C | 3 | 0 | Resident fishing pressure standard deviation |
| NONRES | C | 5 | 0 | Non-resident fishing pressure estimate |
| NON_STDDEV | C | 3 | 0 | Non-resident fishing pressure standard deviation |
| DATA_UNIT | C | 1 | 0 | Unit metric/english of data |
| SERIAL | C | 3 | 0 | FWP Fisheries Serial No. |

**PROTECT.DBF** - Protected Status Database Structure

| Field Name | Type | Width | Dec | Description |
|---|---|---|---|---|
| SHORT_RRN | C | 9 | 0 | Short RRN |
| SECTION | C | 1 | 0 | Section No. |
| PROT_CAT | C | 1 | 0 | Protected Type (I=Federal Wild River, S=Federal Scenic River, R=Rederal Recreation River, T=Federal Wild and Scenic River - Study Area, W=NWPPC Wildlife Protected Area, F=NWPPC Fisheries Portected Area, B=NWPPC Fisheries and Wildlife Area) |
| BG | C | 6 | 0 | NWPPC Protected Areas Big Game Criteria (see PROTLU.DBF) |
| EOA | C | 6 | 0 | NWPPC Protected Areas Amphipbians Criteria (see PROTLU.DBF) |
| EOM | C | 6 | 0 | NWPPC Protected Areas Mammals Criteria (see PORTLU.DBF) |
| EOBR | C | 6 | 0 | NWPPC Protected Areas Riparian Birds Criteria (see |

| | | | | |
|---|---|---|---|---|
| | | | | PROTLU.DBF) |
| EOBU | C | 6 | 0 | NWPPC Protected Areas Upland Birds Criteria (see PROTLU.DBF) |
| FISH | C | 3 | 0 | NWPPC Protected Areas Fisheries Criteria (see PROTLU.DBF) |

**REQUIRED.DBF** - Mandatory Data Fields Database Structure

| Field Name | Type | Width | Dec | Description |
|---|---|---|---|---|
| SHORT_RRN | C | 9 | 0 | Short RRN |
| SECTION | C | 1 | 0 | Section No. |
| INGRESS | C | 1 | 0 | Ingress rating. |
| SPRINGCR | C | 1 | 0 | Spring creek rating. (1 = outstanding rating; 2 = high value; 3 = substantial value; N = not a spring creek) |
| ESTHETICS | C | 1 | 0 | Esthetics rating. (A = outstanding; B = above average; C = average; D = below average; E =low; F = national renown) |
| SVLOCALCOM | L | 1 | 0 | Important to local community |
| LAKE_RES | L | 1 | 0 | Reach affected by a lake or reservoir? |
| STREAM_CAT | C | 1 | 0 | Stream Flow Category (P = Perennial; E = Ephemeral; I = Intermittent) |
| SERIAL | C | 3 | 0 | FWP Fisheries Serial No. |

**SPAWNING.DBF** - Spawning Counts Database Structure

| Field Name | Type | Width | Dec | Description |
|---|---|---|---|---|
| SHORT_RRN | C | 9 | 0 | Short RRN |
| SECTION | C | 1 | 0 | Section No. |
| SPECIES | C | 3 | 0 | Fish species code. See Appendix B-16. |
| SURV_DATE | D | 8 | 0 | Survey date |
| SURV_TYPE | C | 1 | 0 | Type of survey. (R = Redds; F = Fry; A = Adult) |
| SVSPAWNTRB | C | 1 | 0 | Spawning tributary rating.(1 = esential for sport class 1; 2 = essential for sport class 2; 3 = outstanding game fish run.) |
| COUNT | C | 3 | 0 | Counted in stream reach. |
| SURVEYMETH | C | 1 | 0 | Method used to count redds.(A = aerial; F = Foot; B = Boat; T = Trap H= Helicopter; W = Fixed Wing; S= Snorkeling) |
| SECTLENGTH | N | 5 | 2 | Length of stream reach counted. |
| SPTRBHYDRO | C | 8 | 0 | Hydrologic unit of spawner origin |
| SPTRBRRN | C | 8 | 0 | RRN of spawner origin |
| SPTRBSECT | C | 1 | 0 | Section of spawner origin |
| DQR | C | 1 | 0 | Data quality rating. (1 = low to 9 = high) |
| SERIAL | C | 3 | 0 | FWP Fisheries Serial No. |

**STREAM.DBF** - Master Stream Database Structure

| Field Name | Type | Width | Dec | Description |
|---|---|---|---|---|
| HYDROUNIT | C | 8 | 0 | Hydrologic unit. |
| RRN | C | 8 | 0 | Hydrologic Unit + River Reach Number |
| SECTION | C | 1 | 0 | Section No. |
| SHORT_RRN | C | 9 | 0 | Short RRN |
| NAME | C | 30 | 0 | Name of stream |
| DLINK | C | 16 | 0 | Downlink of stream reach |
| DLINK_SEC | C | 1 | 0 | Downlink Section |
| UPLINK1 | C | 16 | 0 | Tributary uplink of stream reach |
| ULINK1_SEC | C | 1 | 0 | Uplink1 Section |
| UPLINK2 | C | 16 | 0 | 2nd tributary uplink of stream reach |
| ULINK2_SEC | C | 1 | 0 | Uplink2 Section |
| TRIB_OF | C | 30 | 0 | Tributary to name |
| LOBOUN | C | 30 | 0 | Verbal description of lower boundary |
| UPBOUN1 | C | 30 | 0 | Verbal description of upper boundary 1 |
| UPBOUN2 | C | 30 | 0 | Verbal description of upper boundary 2 |
| MAP_NUM | N | 3 | 0 | Number of 1:100 K map |
| MAP_NAME | C | 30 | 0 | Name of 1:100 K map |
| LENGTH | N | 4 | 1 | Length of stream reach in miles (from EPA system) |
| WIDTH | N | 4 | 0 | Width of stream reach in feet |
| STREAM_NO | N | 5 | 0 | EPA stream number |
| SEQ_NO | N | 8 | 2 | EPA Sequence number |
| DOWNLAT | N | 7 | 4 | Latitude of lower boundary |
| DOWNLON | N | 8 | 4 | Longitude of lower boundary |
| UPDATE | D | 8 | 2 | Last update date. |
| NEWREACH | L | 1 | 0 | New reach in STREAM |

**STRMBTM.DBF** - Stream Bottom Characteristics Database Structure

| Field Name | Type | Width | Dec | Description |
|---|---|---|---|---|
| SHORT_RRN | C | 9 | 0 | Short RRN |
| SECTION | C | 1 | 0 | Section No. |
| SURV_DATE | D | 8 | 0 | Survey date of sample |
| PBHARDPAN | C | 3 | 0 | Percent of pool bottom that is boulder/hardpan (>256.0 mm). |
| PBBOULDER | C | 3 | 0 | Percent of pool bottom that is cobble (64 mm - 256.0 mm). |
| PBRUBBLE | C | 3 | 0 | Percent of pool bottom that is large gravel (6.5 - 64.0 mm). |
| PBGRAVEL | C | 3 | 0 | Percent of pool bottom that is small gravel (2.0 - 6.4 mm). |
| PBFINES | C | 3 | 0 | Percent of pool bottom that is fines (<2.0 mm). |
| PBSILT | C | 3 | 0 | Percent of pool bottom that is silt. |
| RATPOOLBTM | C | 1 | 0 | Pool bottom data quality rating. (1 = low to 9 = high) |
| RNBHARDPAN | C | 3 | 0 | Run bottom percentage that is boulder/hardpan (>256.0 mm). |
| RNBBOULDER | C | 3 | 0 | Run bottom percentage that is cobble (64 mm - 256.0 mm). |
| RNBRUBBLE | C | 3 | 0 | Run bottom percentage that is large gravel (6.5 - 64.0 mm). |
| RNBGRAVEL | C | 3 | 0 | Run bottom percentage that is small gravel (2.0 - 6.4 mm). |
| RNBFINES | C | 3 | 0 | Run bottom percentage that is fines (<2.0 mm). |
| RNBSILT | C | 3 | 0 | Run bottom percentage that is silt. |
| RATRUNBTM | C | 1 | 0 | Run bottom data quality rating. (1 = low to 9=high) |
| RFBHARDPAN | C | 3 | 0 | Riffle bottom percentage that is boulder/hardpan (>256.0 mm). |
| RFBBOULDER | C | 3 | 0 | Riffle bottom percentage that is cobble (64 mm - 256.0 mm). |
| RFBRUBBLE | C | 3 | 0 | Riffle bottom percentage that is large gravel (6.5 - 64.0 mm). |
| RFBGRAVEL | C | 3 | 0 | Riffle bottom percentage that is small gravel (2.0 - 6.4 mm). |
| RFBFINES | C | 3 | 0 | Riffle bottom percentage that is fines (<2.0 mm). |
| RFBSILT | C | 3 | 0 | Riffle bottom percentage that is silt. |
| RATRIFFBTM | C | 1 | 0 | Riffle bottom data quality rating. (1 = low to 9 = high) |
| EMBEDD | N | 1 | 0 | Embeddness score (1 - 5) |
| SUB_SCORE | N | 4 | 1 | Substrate composition score. (1 - 6) |
| PER_QUAR | N | 3 | 0 | Percentage of substrate less than 0.25 in. (6.35 cm) |
| SUB_METH | C | 1 | 0 | Substrate method (M = McNeil, S = Substrate score, W = Whitlock, V = Vibert Box, O = Ocular) |
| SUB_SAMP | N | 2 | 0 | Number of samples used for analysis |
| MORE_SUB | L | 1 | 0 | More substrate data available |
| SERIAL | C | 3 | 0 | FWP Fisheries Serial No. |

**TREE.DBF** - Tree and shrub species Database Structure

| Field Name | Type | Width | Dec | Description |
|---|---|---|---|---|
| SHORT_RRN | C | 9 | 0 | Short RRN |
| SECTION | C | 1 | 0 | Section No. |
| SPECIES | C | 6 | 0 | Species code (see Appendix C-10) |
| SERIAL | C | 3 | 0 | Serial No. |

## TREE AND SHRUB LOOK-UP TABLE

| Type | Code | Species |
|---|---|---|
| S | RHAALN | Alder Buckthorn |
| S | KALMIC | Alpine Laurel |
| S | BETGLA | Bog Birch |
| S | RIBODO | Buffalo Currant |
| S | PRUVIR | Common Chokecherry |
| S | SYMALB | Common Snowberry |
| S | CRADOU | Douglas Hawthorn |
| S | SPIDOU | Douglas Spirea |
| S | SARVER | Greasewood |
| S | CORSTO | Red-osier Dogwood |
| S | POTFRU | Shrubby Cinquefoil |
| S | SHEARG | Silver Buffaloberry |
| S | ARTCAN | Silver Sagebrush |
| S | ALNINC | Thinleaf Alder |
| S | LONUTA | Utah Honeysnuckle |
| S | VACOCC | Western Huckleberry |
| S | SALSPP | Willow,undesignated speci |
| S | ROSWOO | Wood Rose |
| T | ULMAME | American Elm |
| T | POPTRI | Black Cottonwood |
| T | ACENEG | Boxelder |
| T | POPSPP | Cottonwood,unknown specie |
| T | PSEMEN | Douglas Fir |
| T | POPDEL | Eastern Cottonwood |
| T | PICANG | Engelmann Spruce |
| T | ABIGRA | Grand Fir |
| T | FRAPEN | Green Ash |
| T | PINCON | Lodgepole Pine |
| T | POPANG | Narrowleaf Cottonwood |
| T | SALAMY | Peachleaf Willow |
| T | PINPON | Ponderosa Pine |
| T | POPTRE | Quaking Aspen |
| T | JUNSCO | Rocky Mountain Juniper |
| T | ELAANG | Russian Olive |
| T | ABILAS | Subalpine Fir |
| T | LARLYA | Subalpine Larch |
| T | BETOCC | Water Birch |
| T | TSUHET | Western Hemlock |
| T | LAROCC | Western Larch |
| T | THUPLI | Western Red Cedar |
| T | PINMON | Western White Pine |

## BASINS.DBF - HYDROUNIT CODES, NAMES, AND ABBREVIATONS

| Hydrounit | Basin Name | Hydrounit Abbr. |
|---|---|---|
| 10010001 | Belly | QA |
| 10010002 | St. Mary | QB |
| **Upper Missouri River Basin** | | |
| 10020001 | Red Rock | AA |
| 10020002 | Beaverhead | AB |
| 10020003 | Ruby | AC |
| 10020004 | Big Hole | AD |
| 10020005 | Jefferson | AE |
| 10020006 | Boulder | AF |
| 10020007 | Madison | AG |
| 10020008 | Gallatin | AH |
| **Missouri-Forks to Teton** | | |
| 10030101 | Upper Missouri | BA |
| 10030102 | Upper Missouri - Dearborn | BB |
| 10030103 | Smith | BC |
| 10030104 | Sun | BD |
| 10030105 | Belt | BE |
| 10030201 | Two Medicine | CA |
| 10030202 | Cut Bank | CB |
| 10030203 | Marias | CC |
| 10030204 | Willow | CD |
| 10030205 | Teton | CE |
| **Missouri- Lower River** | | |
| 10040101 | Bullwhacker - Dog | DA |
| 10040102 | Arrow | DB |
| 10040103 | Judith | DC |
| 10040104 | Fort Peck Reservoir | DD |
| 10040105 | Big Dry | DE |
| 10040106 | Little Dry | DF |
| 10040201 | Upper Musselshell | EA |
| 10040202 | Middle Musselshell | EB |
| 10040203 | Flatwillow | EC |
| 10040204 | Box Elder | ED |
| 10040205 | Lower Musselshell | EE |

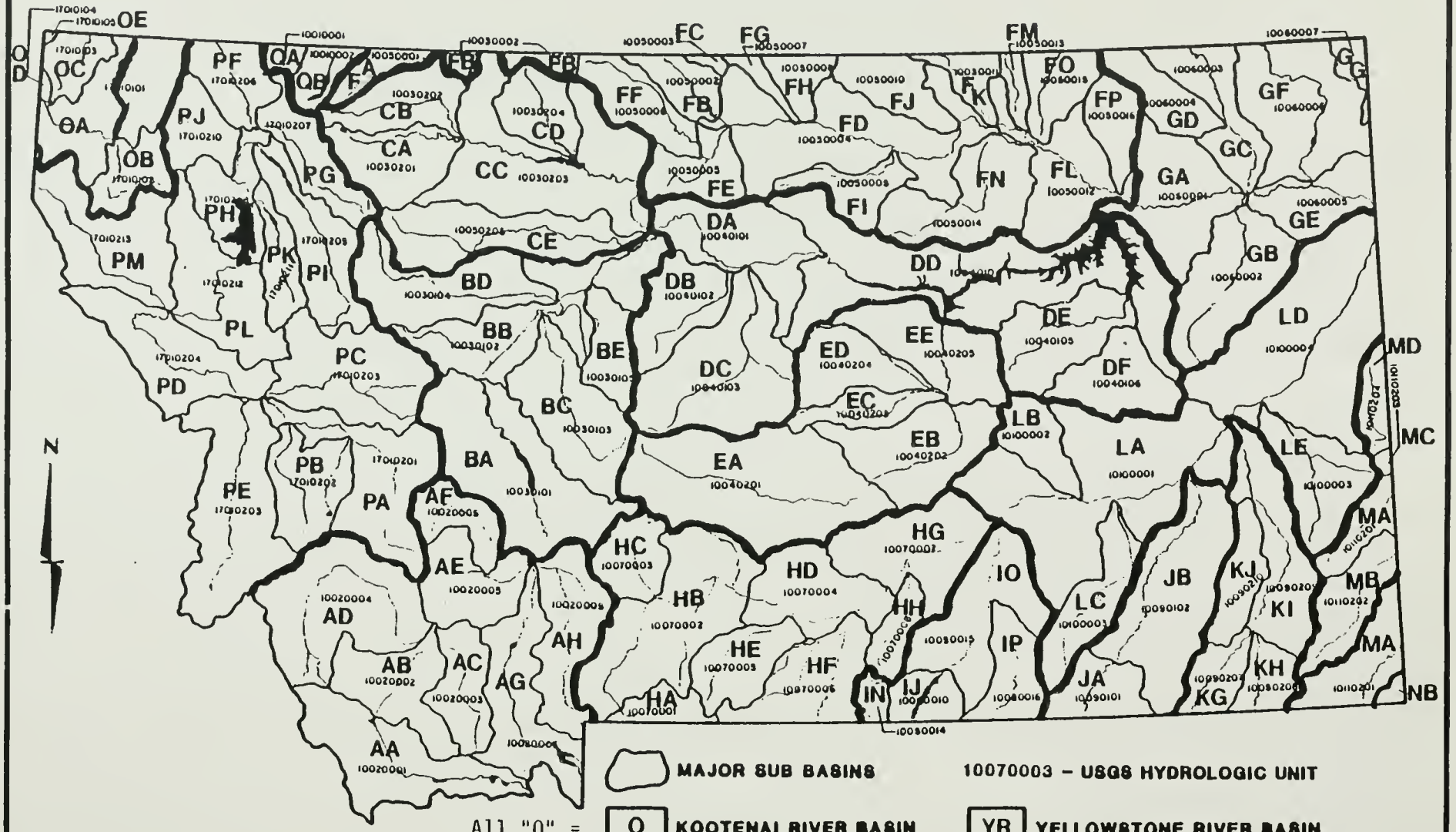
**BASIN.DBF (cont.)**

| Hydrounit | Basin Name | Hydrounit Abbr. |
|---|---|---|
| **Milk River Basin** | | |
| 10050001 | Milk Headwaters | FA |
| 10050002 | Upper Milk | FB |
| 10050003 | Wild Horse Lake | FC |
| 10050004 | Middle Milk | FD |
| 10050005 | Big Sandy | FE |
| 10050006 | Sage | FF |
| 10050007 | Lodge | FG |
| 10050008 | Battle | FH |
| 10050009 | Peoples | FI |
| 10050010 | Cottonwood | FJ |
| 10050011 | Whitewater | FK |
| 10050012 | Lower Milk | FL |
| 10050013 | Frenchman | FM |
| 10050014 | Beaver in Milk River Catalog Unit | FN |
| 10050015 | Rock | FO |
| 10050016 | Porcupine | FP |
| **Missouri/Poplar Basin** | | |
| 10060001 | Prarie Elk - Wolf | GA |
| 10060002 | Redwater | GB |
| 10060003 | Poplar | GC |
| 10060004 | West Fork Poplar | GD |
| 10060005 | Charlie - Little Muddy | GE |
| 10060006 | Big Muddy | GF |
| 10060007 | Brush Lake Closed Basin | GG |
| **Upper Yellowstone basin** | | |
| 10070001 | Yellowstone Headwaters | HA |
| 10070002 | Upper Yellowstone | HB |
| 10070003 | Shields | HC |
| 10070004 | Upper Yellowstone - Lake Basin | HD |
| 10070005 | Stillwater in Upper Yellowstone | HE |
| 10070006 | Clarks Fork Yellowstone | HF |
| 10070007 | Upper Yellowstone - Pompeys Pillar | HG |
| 10070008 | Pryor | HH |
| **Bighorn River Basin** | | |
| 10080010 | Big Horn Lake | IJ |
| 10080014 | Shonshone | IN |
| 10080015 | Lower Bighorn | IO |
| 10080016 | Little Bighorn | IP |

**BASIN.DBF (cont.)**

| Hydrounit | Basin Name | Hydrounit Abbr. |
|---|---|---|
| **Tongue River Basin** | | |
| 10090101 | Upper Tongue | JA |
| 10090102 | Lower Tongue | JB |
| 10090207 | Middle Powder | KG |
| 10090208 | Little Powder | KH |
| **Lower Powder Basin** | | |
| 10090209 | Lower Powder | KI |
| 10090210 | Mizpah | KJ |
| **Lower Yellowstone Basin** | | |
| 10100001 | Lower Yellowstone - Sunday | LA |
| 10100002 | Big Porcupine | LB |
| 10100003 | Rosebud | LC |
| 10100004 | Lower Yellowstone | LD |
| 10100005 | O'Fallon | LE |
| **Little Missouri Basin** | | |
| 10110201 | Upper Little Missouri | MA |
| 10110202 | Boxelder | MB |
| 10110203 | Middle Little Missouri | MC |
| 10110204 | Beaver in Little Missouri Catalog | MD |
| 10120202 | Lower Belle Fourche | NB |
| **Kootenai Basin** | | |
| 17010101 | Upper Kootenai | OA |
| 17010102 | Fisher | OB |
| 17010103 | Yaak | OC |
| 17010104 | Lower Kootenai | OD |
| 17010105 | Moyie | OE |
| **Clark Fork/Flathead Basin** | | |
| 17010201 | Upper Clark Fork | PA |
| 17010202 | Flint - Rock | PB |
| 17010203 | Blackfoot | PC |
| 17010204 | Middle Clark Fork | PD |
| 17010205 | Bitterroot | PE |
| 17010206 | North Fork Flathead | PF |
| 17010207 | Middle Fork Flathead | PG |
| 17010208 | Flathead Lake | PH |
| 17010209 | South Fork Flathead | PI |
| 17010210 | Stillwater in Pend Oreille Catalog | PJ |
| 17010211 | Swan | PK |
| 17010212 | Lower Flathead | PL |
| 17010213 | Lower Clark Fork | PM |

Map showing drainages and drainage codes.




MAJOR SUB BASINS

10070003 – USGS HYDROLOGIC UNIT

All "O" = O KOOTENAI RIVER BASIN

All "P" = PR CLARK FORK BASIN

All "ABCDEFG" = UM MISSOURI RIVER BASIN

YR YELLOWSTONE RIVER BASIN
All "HIJKL"

MN LITTLE MISSOURI RIVER BASIN
All "M" & "N"

Q ST. MARY RIVER BASIN
All "Q"

# Montana Department of Fish, Wildlife & Parks

**GIS DATA of the MONTANA RIVERS INFORMATION SYSTEM**

**January 1994**

**DESCRIPTION OF DATA LAYERS WE ARE DEVELOPING**

Fisheries:

1. Western Montana 100k hydrography with river reach numbers (tied to statewide fisheries data base).
2. Eastern Montana 100k hydrography with river reach numbers; 75% complete.

Wildlife

1. Region 1 white-tail, mule deer, and elk winter ranges; 1:24k; complete.
2. Statewide goat, sheep, moose, antelope overall and seasonal distributions; 1:250k; edit stages Regions 1-5; due July 1994.
3. Statewide white-tail, mule deer, and elk overall and seasonal distributions; 1:250k; due July 94.
4. Yellowstone Ecosystem deer, elk, moose, sheep, and goat overall distribution and winter ranges; 1:250k; in edit stages.
5. Statewide distributions for 27 nongame species which represent Montana's ecosystems; scales will be dependent on sources; due July 94.
6. Flathead River important species use areas and habitats; 1:24k; complete.

Recreation:

1. Statewide wildlife viewing Areas; 1:100k; complete.
2. Statewide wildlife Management Areas; 1:24 k and 1:100k; complete.
3. Statewide fishing access areas including state, county, and federal; 1:100k; complete.
4. National Park Service campgrounds; 1:100k; complete.
5. Forest Service campgrounds; 1:100k; complete.

DATA LAYERS WHICH WE USE (IN HOUSE)

1:2,000,000 Lakes and Streams
1:250k Highways
1:250k Townships, Cities, Counties
1:250k Indian Reservations
1:100k National Parks and Wildlife Refuges
1:250k Railroads
1:500k Montana Land Resource Areas (ecological types) from Soil Conservation Service
1:126,720 National Forests and land ownership within Districts
1:100k hydrography (no river reach numbers)
1:100k U.S. Census TIGER data
1:24k Montana Natural Heritage Program Element Occurrences
1:24k 60 m raster digital elevation models

## APPENDIX E

### Recreation Databases Structures

**GENREC.DBF** - Contains data source information and general recreation information, including: use, access,water character, scenery and solitude, and boating information

| Field Name | Type | Width | Field Definition |
|---|---|---|---|
| HYDROUNIT | C | 8 | HYDROLOGIC UNIT |
| RRN | C | 8 | EPA RIVER REACH NUMBER |
| SHORT_RRN | C | 9 | BASIN CODE + RIVER REACH NUMBER |
| WATERBDY | C | 1 | R=RESERVOIR,L=LAKE,S=STREAM,F=FLOATABLE STREAM |
| STREAM | C | 30 | STREAM NAME |
| TOURISM | N | 1 | DEPT. OF COMMERCE TOURISM BUREAU VACATION REGION SEE LOOKUP TABLE I |
| NAME | C | 30 | INDIVIDUAL'S NAME |
| AGENCY | C | 3 | AGENCY RATING CODE (1=DFWP, 2=BLM, 3=USFS) |
| REC_SOURCE | C | 100 | SOURCES OF DATA |
| SOURCE_COD | C | 15 | CODE TO PUBLIC LIBRARY FILE, GIVES INFO ON TYPE AND METHODS OF DATA COLLECTION |
| REC_UPDATE | D | 8 | REC DATA REVISION DATE |
| NUM_EVAL | N | 2 | NUMBER OF INDIVIDUALS EVALUATING THE REACH |
| ACCESS | N | 1 | ACCESS RATING (1=ABUNDANT, 2=MODERATE, 3=LIMITED, 4=RESTRICTED, 0=UNKNOWN) SEE LOOKUP TABLE III |
| INGRESS | N | 1 | INGRESS RATING SEE LOOKUP TABLE IV |
| ROS_CLASS1 | N | 1 | ROS CLASS (1=PRIMITIVE, 2=SEMIPRIMITIVE/NONMOTORIZED, 3=SEMIPRIMITIVE/MOTORIZED, 4=ROADED NATURAL, 5=RURAL, 6=URBAN 0=UNKNOWN) SEE LOOKUP TABLE V |
| ROS_CLASS2 | N | 1 | SAME AS ROS_CLASS1 |
| SCENIC_QUA | N | 1 | SCENIC QUALITY (1=EXCEPTIONAL, 2=HIGH, 3=MODERATE, 4=LIMITED, 0=UNKNOWN) SEE LOOKUP TABLE VI |
| USE_LEVEL | N | 6 | QUANTITATIVE MEASURE OF OVERALL USE (# VISITOR DAYS IN THOUSANDS PER ANNUM) |
| USE_ESTIMA | N | 1 | OVERALL USE ESTIMATE CODE (1=HIGH, 2=MODERATE, 3=LOW, 0=UNKNOWN) SEE LOOKUP TABLE VII |
| DQR_USE | N | 1 | DATA QUALITY RATING FOR OVERALL USE ESTIMATE CODE (1=BASED ON JUDGEMENT ONLY, 2=BASED ON SOME MEASURABLE DATA, 3=BASED ON MEASURABLE DATA) |
| ANGLER_DAY | N | 6 | NUMBER OF ANGLER DAYS IN THOUSANDS PER ANNUM |

GENREC.DBF (CONT.)

| Field Name | Type | Width | Field Definition |
|---|---|---|---|
| USEEST_FSH | N | 1 | FISHING USE ESTIMATE CODE (1=HIGH, 2=MODERATE, 3=LOW, 0=UNKNOWN) |
| DQR_FSH | N | 1 | DATA QUALITY RATING FOR FISHING USE ESTIMATE (1=BASED ON JUDGEMENT ONLY, 2=BASED ON SOME MEASURABLE DATA, 3=BASED ON MEASURABLE DATA) |
| HUNTER_DAY | N | 6 | NUMBER OF HUNTER DAYS IN THOUSANDS PER ANNUM |
| USEEST_HUN | N | 1 | HUNTING USE ESTIMATE CODE (1=HIGH, 2=MODERATE, 3=LOW, 0=UNKNOWN) |
| DQR_HUN | N | 1 | DATA QUALITY RATING FOR HUNTING USE ESTIMATE (1=BASED ON JUDGEMENT ONLY, 2=BASED ON SOME MEASURABLE DATA, 3=BASED ON MEASURABLE DATA) |
| BOATER_DAY | N | 6 | NUMBER OF BOATER DAYS IN THOUSANDS PER ANNUM |
| USEEST_BOA | N | 1 | BOATING USE ESTIMATE CODE (1=HIGH, 2=MODERATE, 3=LOW, 0=UNKNOWN) |
| DQR_BOA | N | 1 | DATA QUALITY RATING FOR BOATING USE ESTIMATE (1=BASED ON JUDGEMENT ONLY, 2=BASED ON SOME MEASURABLE DATA, 3=BASED ON MEASURABLE DATA) |
| LAND_DAY | N | 6 | NUMBER OF RECREATIONAL LAND USER DAYS IN THOUSANDS PER ANNUM |
| USEEST_LAN | N | 1 | RECREATIONAL LAND USE ESTIMATE CODE (1=HIGH, 2=MODERATE, 3=LOW, 0=UNKNOWN) |
| DQR_LAN | N | 1 | DATA QUALITY RATING FOR LAND USE ESTIMATE (1=BASED ON JUDGEMENT ONLY, 2=BASED ON SOME MEASURABLE DATA, 3=BASED ON MEASURABLE DATA) |
| DEMAND | N | 1 | TYPE OF DEMAND (1=NATIONAL, 2=STATE, 3=REGIONAL, 4=LOCAL, 5=LIMITED, 0=UNKNOWN) SEE LOOKUP TABLE VIII |
| BTBL_SEAS | N | 1 | TIME OF YEAR THAT THE REACH IS TYPICALLY BOATABLE SEE LOOKUP TABLE IX |
| CFS_MIN | N | 5 | ANNUAL MINIMUM FLOW IN CUBIC FEET PER SECOND |
| CFS_MAX | N | 5 | ANNUAL MAXIMUM FLOW IN CUBIC PER SECOND |
| WATER_CLAS | C | 6 | WHITEWATER CLASSIFICATION (1 - 6 = CLASS 1 - 6, 0=UNKNOWN) SEE LOOKUP TABLE X |
| BOAT_OBST | N | 1 | OBSTRUCTION TO BOATERS (1=FALLS, 2=CABLES, 3=DIVERSION DAM, 4=FENCES, 5=LOG JAM, 6=NO OBSTRUCTION, 7=OTHER, 0=UNKNOWN) |

GENREC.DBF (CONT)

| Field Name | Type | Width | Field Definition |
|---|---|---|---|
| SIGNED_OBS | C | 1 | THE HAZARD/OBSTRUCTION IS SIGNED |
| MUST_PORT | C | 1 | IT IS NECESSARY TO PORTAGE AROUND THE HAZARD |
| BOAT_REG | C | 1 | THERE ARE BOATING REGULATIONS ON THE REACH |
| COMM_BOAT | C | 1 | THERE IS COMMERCIAL BOATING ON THE REACH |
| SHUTTLE | C | 1 | THERE ARE SHUTTLE SERVICES AVAILABLE |
| EVENTS | C | 1 | THE REACH IS USED FOR SPECIAL BOATING EVENTS/COMPETITION |
| SOURCE | C | 2 | SOURCE OF COMMENT (UR=UNIQUE RECREATIONAL OPPORTUNITY, BR=DESCRIPTION OF BOATING REGULATIONS, EV=DESCRIPTION OF SPECIAL EVENT, RA=NAME OF RECREATION AREA, KS=KEY SPECIES VIEWABLE, PK=PEAK NAME, RT=ROCK TYPES, WW=WHITEWATER/BOATING) |
| COMMENTS | M | 10 | COMMENT |

**RECTRAIT** - Information pertaining to recreational land, water, and hunting/fishing activities. (RECTRAIT)

| CATAGORY | CODE | TEXT |
|---|---|---|
| CONSUMPTIVE | | |
| C | BG | USED FOR BIG GAME HUNTING |
| C | BH | USED FOR BIRD HUNTING |
| C | BF | USED FOR BOAT FISHING |
| C | BO | USED FOR BOW HUNTING |
| C | HU | USED FOR HUNTING |
| C | SF | USED FOR SHORE FISHING |
| C | TR | USED FOR TRAPPING |
| C | UP | USED FOR UPLAND BIRD HUNTING |
| C | WH | USED FOR WATERFOWL HUNTING |
| WATER | | |
| W | CA | USED FOR CANOEING |
| W | IN | USED FOR INNERTUBING |
| W | JB | USED FOR JETBOATING |
| W | JS | USED FOR JETSKIING |
| W | JD | USED FOR JOHN/DRIFT BOAT |
| W | KA | USED FOR KAYAKING |
| W | MB | USED FOR MOTORBOATING |
| W | RA | USED FOR RAFTING |
| W | SB | USED FOR SAILBOARDING |
| W | SW | USED FOR SWIMMING |
| W | WS | USED FOR WATERSKIING |
| LAND | | |
| L | DG | HAS GRAVEL ROADS FOR DRIVING |
| L | MT | HAS MOTORIZED TRAIL USE |
| L | NT | HAS NON-MOTORIZED TRAIL USE |
| L | DP | HAS PAVED ROADS FOR DRIVING |
| L | BP | USED FOR BACKPACKING |
| L | BW | USED FOR BIRD WATCHING |
| L | XC | USED FOR CROSS COUNTRY SKIING |
| L | FW | USED FOR FOUR-WHEEL DRIVE RECREATION |
| L | GP | USED FOR GOLD PANNING |
| L | HK | USED FOR HIKING |
| L | HB | USED FOR HORSEBACK RIDING |
| L | IC | USED FOR ICE CLIMBING |
| L | MB | USED FOR MOUNTAIN BIKING |
| L | MC | USED FOR MOUNTAIN CLIMBING |
| L | OR | USED FOR OFF ROAD VEHICLES |
| L | RC | USED FOR ROCK CLIMBING |
| L | RO | USED FOR ROCK COLLECTING |
| L | SM | USED FOR SNOWMOBILING |
| L | WV | USED FOR WILDLIFE VIEWING |

**RECSITE** - Recreation site information; availability of facilities.

| Field Name | Type | Width | Field Definition |
|---|---|---|---|
| SHORT_RRN | C | 9 | EPA RIVER REACH NUMBER |
| FILE1 | C | 7 | STATE LANDS FILE # OR WVA # |
| FILE2 | C | 7 | |
| NO_SITES | N | 3 | NUMBER OF DEVELOPED RECREATION SITES ALONG THE REACH |
| SITE_NAME | C | 40 | OFFICIAL SITE NAME |
| SITE_TYPE1 | N | 2 | TYPE OF RECREATION SITE SEE LOOKUP TABLE XI |
| SITE_TYPE2 | N | 2 | |
| RIVERMILE | C | 5 | LOCATION OF SITE BY RIVERMILE |
| DAYUSE | C | 1 | DAYUSE SITE ONLY |
| SEASON | C | 17 | THE SEASON FEES ARE COLLECTED |
| STAY_L | N | 2 | MAXIMUM NUMBER OF CONSECUTIVE DAYS A CAMPER CAN STAY AT THE SITE |
| CAMP_FEE | C | 1 | CAMPING FEE |
| ENTRY_FEE | C | 1 | ENTRY OR USE FEE |
| PARKING | C | 1 | NUMBER OF PARKING SPOTS AT THE SITE |
| PICNIC | C | 1 | NUMBER OF PICNIC SITES AVAILABLE |
| CAMP | N | 3 | NUMBER OF CAMPING UNITS AVAILABLE AT THE SITE |
| TRAILER | C | 1 | TRAILERS UNITS ARE ALLOWED |
| DUMP | C | 1 | DUMP STATION FOR TRAILERS AVAILABLE |
| FLUSH_TOIL | C | 1 | FLUSH TOILET IS AVAILABLE |
| PIT_TOIL | C | 1 | PIT TOILET IS AVAILABLE |
| HANDI_TOIL | C | 1 | DISABLED TOILET IS AVAILABLE |
| HANDI_FAC | C | 1 | DISABLED FACILITIES ARE AVAILABLE |
| PACK_OUT | C | 1 | PACK IN/PACK OUT AREA (NO GARBAGE COLLECTION) |
| WATER | C | 1 | DRINKING WATER IS AVAILABLE |
| BOAT_RAMP | N | 1 | BOAT RAMP TYPE (1=CARRY IN LAUNCH, 2=PAVED,3=UNPAVE D4WD, 4=NO RAMP, 0=UNKNOWN) |
| FISH_SITE | C | 1 | FISHING IS ACCESSIBLE FROM SITE |
| SWIM_SITE | C | 1 | THERE IS A DESIGNATED BEACH/SWIMMING AREA |
| TRAILS | C | 1 | TRAILS ARE ACCESSIBLE FROM SITE |
| VISIT_CTR | C | 1 | THERE IS A VISITOR CENTER |
| INTERP | C | 1 | THERE ARE INTERPRETIVE DEVICES |

## Look-up Tables for Recreation Databases

### LOOKUP TABLE I - TOURISM BUREAU VACATION REGION

1=Glacier Country
2=Goldwest Country
3=Yellowstone Country
4=Charlie Russell Country
5=Missouri River Country
6=Custer Country

### LOOKUP TABLE III - ACCESS

1=ABUNDANT
Abundant access exists if the segment is parallelled by or frequently intersected by paved or car-suitable roads. Access to the river shoreline should also be abundant and permit easy put-in and take-out of boats.
2=MODERATE
Moderate access exists if the segment is occasionally parallelled or intersected by good quality roads. Access to the shoreline may be restricted in places by topography. Access to put-ins or take-outs is not as easy.
3=LIMITED
Limited access exists if the segment is rarely parallelled or intersected by roads; the main access may be by poor roads or trails. Shoreline access may be difficult for much of the segment's length.
4=RESTRICTED
Restricted access exists of the segment is not accessible by road and the shoreline is difficult to reach from adjacent lands.
0=UNKNOWN
Insufficient information available to evaluate access.

### LOOKUP TABLE IV - INGRESS RATINGS

1=A stream section bordered almost entirely by a mix of public lands which insure ingress by anglers (excluding state school sections).
2=A stream section bordered by a mix of private and public land where the public land is distributed in such a way that no significant portion of the stream is unavailable by vehicle and/or walking. Floating may also be a major means of access.
3=A stream section bordered by mostly private land where ingress is uncontrolled or readily available by permission. This portion may be available by floating or through steam access laws. Also includes corporate lands that are currently open but could go to individual ownership in the future or company policy regarding ingress could change.
4=A stream section bordered mostly by private land where ingress is limited but some fishing is allowed. Includes minor portions where public land or road crossing provides limited ingress. The portion through private land may be available by floating or through stream access laws.
5=A stream section bordered entirely by private land where public fishing is available for a fee or where a small group has leased exclusive rights. Legality may be in question on some streams but this category identifies the current "fee" or "lease" fishing areas.
6=A stream section bordered mostly by private land where little or no ingress by permission is allowed. Floating is precluded by stream size or other physical limitation (no road or public land reach stream).
7=A stream or stream segment bordered by public land that is unavailable because of posting on private land or locked gates on private roads.

## LOOKUP TABLE V - RECREATIONAL OPPORTUNITY SPECTRUM (ROS)

Both the Bureau of Land Management and the Forest Service use the Recreational Opportunity Spectrum (ROS) as an indicator of the experience settings likely available.

1=PRIMITIVE
These areas are the largest in size and the most remote of all, where both interaction and evidence of humans are slight. Often the settings are the central core of wilderness areas, completely away from sights and sounds of people. The areas are for foot and horse traffic only. No facilities are provided. Visitors should have adequate outdoor skills to cope with a multitude of natural wildland conditions. They bring all their own equipment for camping, hiking, and the like.
There is no timber harvest. Other resource activity such as grazing may occur, but is usually limited. Trails offer varying degrees of travel difficulty; sometimes large areas have no trails at all. There are no onsite controls over visitors, but they may see a back country ranger occasionally. Users generally are free to travel and camp where they want, although there may be restrictions on camping areas near lakeshores and streambanks to help protect those areas.

2=SEMIPRIMITIVE/NONMOTORIZED
These settings are similar to semiprimitive/motorized except they are designed for the hiker, backpacker, and horse user. Sights and sounds of motorized users are not found on the trails. Distant sounds of highway and logging traffic may sometimes be heard.
Hiking and equestrian trails offer varying degrees of travel difficulty and provide challenges to users. The visitor usually displays higher degrees of outdoor skills and must bring all their own equipment for activities like camping, hiking, and river running. Few facilities are provided.
Timber harvest activities may occur but are limited. Any motorized access is closed to public recreational use. The forest appears natural. Some onsite controls over users occur, such as trailhead registration and restrictions on camping areas to protect lakeshores and streamside areas.

3=SEMIPRIMITIVE/MOTORIZED
These settings are somewhat remote, they are away from the main traveled highways or roads where nature predominates. The visitor often must have a four-wheel drive vehicle or trail bike to travel the roads and trails. Visitors may also travel by foot or horseback expecting to see the motorized user. Concentrations of users is low. There may be logging or mining, but it is limited. The landscape appears predominantly natural. Recreation facilities are few, if any. At some campspots there may be sealed-pit toilets and spring boxes for water. There are only limited onsite controls over users, such as road closure signs and limits on where they may camp to protect lake and streamside areas.

4=ROADED NATURAL
These are the settings seen from the many highways and scenic roads throughout the State's underdeveloped areas including National Forests. The vegetation is often managed through timber harvest to maintain a healthy, natural-appearing forest. Recreation places are smaller campgrounds or winter sports facilities with moderate evidence of people.
Roads and parking areas are often gravel, though some may be paved. Facilities include toilets with sealed pits, fireplaces, tables and level places for tents. Water may be provided by handpumps. There are no hookups for trailers, but parking spurs will often accommodate self-contained units.
Fees are charged at many campgrounds. The user is restricted to camping and picnicking in designated sites by roadside barriers and is subjected to periodic visits by a compliance checker.

5=RURAL
These are often the settings between the cities and the forests, such as pastoral farmlands and small communities. Affiliation with people and convenience of facilities are prevalent. Recreation places are often county and state parks.
Rural settings may include winter sports areas and large campgrounds on National Forest lands. Facilities often include cooking grills and flush toilets with electric lights. Occasionally electric and sewer hookups for trailers are provided. Fees are charged on nearly every site. The visitor is restricted to designated roads and campsites. A campground host may be on duty to help the visitor. Outdoor living skills are not important and are seldom needed.

6=URBAN
The urban settings are often where people live and work. Buildings dominate as do powerlines, traffic controls, and paved roads. Large numbers of users can be expected. Recreation places are often city or county parks with exotic plants and mowed lawns.
Few urban recreation places occur on National Forests. Examples of National Forest urban areas include large resorts and winter sports complexes.

0=UNKNOWN
Insufficient information available to evaluate ROS class.

## LOOKUP TABLE VI - SCENIC QUALITY

1=EXCEPTIONAL
Outstanding scenic quality. For these segments, landforms, vegetation patterns, and water features combine to create unique, highly memorable, and harmonious visual settings. Views along the river and away from the river to surrounding scenery are highly diverse, providing river users with scenery that is spectacular and/or not common on other rivers in the region. If buildings, roads, and other cultural modifications are present, they either add favorably to or do not intrude on visual quality for river users.

2=HIGH
High scenic quality. For these segments, landforms, vegetation patterns, and water features combine to create a highly memorable and visually pleasing setting, although one that may be more common to the region. Views along and away from the river are highly diverse and cultural modifications, if present, either add to or do not detract from the visual setting.

3=MODERATE
Moderate scenic quality. For these segments, landforms, vegetation patterns, and water features along the river combine to create harmonious but common visual settings. Views along and away from the river are somewhat varied, but lack a high degree of contrast and diversity. Encroachment of cultural modifications may be evident, and either adds little to or detracts from visual quality.

4=LIMITED
Low scenic quality. For these segments, landforms, vegetation patterns, and water features combine to create visual settings lacking in variety and contrast. Views along and away from the river are monotonous and common. Cultural modifications may dominate and detract from visual quality.

0=UNKNOWN
Insufficient information available to evaluate scenic quality.

**LOOKUP TABLE VII - USE ESTIMATE**

1=HIGH
Heavy or concentrated recreational use; on a typical weekend day greater than 6 parties will commonly be seen at sites on shore and on the river.

2=MODERATE
Moderate or dispersed recreational use; on a typical weekend day 4-6 parties will commonly be seen on or along the river.

3=LOW
Limited or highly dispersed use; on a typical weekend day 0-3 parties is typical on or along the river.

0=UNKNOWN
Insufficient information to evaluate use

**DATA QUALITY RATING**
1=Use estimate is based on judgement only
2=Use estimate is based on some measurable data
3=Use estimate is based on measurable data

**LOOKUP TABLE VIII - DEMAND**

1=NATIONAL
Users drawn from throughout the country or beyond
2=STATE
Users drawn from throughout the state
3=REGIONAL
Regional use predominates
4=LOCAL
Local use predominates
5=LIMITED
Very occasional or no recreational use
0=UNKNOWN
Insufficient information available to evaluate demand

**LOOKUP TABLE IX - BOATABLE SEASON**

1=Not boatable
2=Typically summer boating only
3=Boatable only during spring runoff
4=Boatable during spring runoff, with sustained flows to mid-summer
5=Year round sustained flow
6=Year round sustained flow, dependant on ice cover
7=Boatable spring through fall
0=Insufficient information available to evaluate boatable season

## LOOKUP TABLE X - WHITEWATER CLASSIFICATION

1=CLASS I
Basically flat water, though it may have some small waves and ripples, and very minor obstacles.

2=CLASS II
The easiest rapids are found under this classification. Scouting is not necessary and minimal maneuvering is required. Waves can get up to three feet high. Channels are obvious and there are no dangerous hazards.

3=CLASS III
These are moderately hard rapids. Rapids may contain numerous boulders and holes that could flip a kayak or canoe and occasionally some rafts. Waves can be up to five feet high. Maneuvering is required to miss rocks and holes. Scouting is helpful for inexperienced boaters to plan their route. More experienced boaters may be able to scout from the river as they run through it.

4=CLASS IV
Skillful maneuvering is required in running the rocky, constricted channels of these difficult rapids. Hazards may include large holes that can flip any craft, strong cross currents, and sharp turns. Waves are over five feet high. Kayakers should know how to roll. In most cases, class IV drops should be scouted.

5=CLASS V
These extremely difficult, violent, turbulent rapids may require complicated maneuvering through a series of hazards, usually including large drops. Holes can be huge, unrelenting, difficult to avoid, and able to flip the largest of whitewater craft. Usually class V rapids are the domain of kayaks and decked canoes, but they sometimes are run by rubber boats. Kayakers and decked canoe boaters must be able to execute a reliable roll. Rescue is very difficult and when it is possible, the probability of injury or death from an accident or swim is high. These rapids must be scouted.

6=CLASS VI
Most boaters term this classification as unrunnable. Those who do attempt class VI rapids have a high likelihood of injury or death.

0=UNKNOWN Insufficient information available to evaluate whitewater class.

## LOOKUP TABLE XI - RECREATION SITE TYPE

1=Forest Service Campground
2=Bureau of Land Management
3=National Park
4=National Recreation Area
5=National Historic Site
6=National Battlefield
7=National Park Service Campground
8=State Park
9=State Fishing Access Site
10=State Wildlife Management Area
12=National Recreation Trail
13=Wildlife Viewing Area
14=Other Recreation Area

DOE/BP-2326
February 1994
10